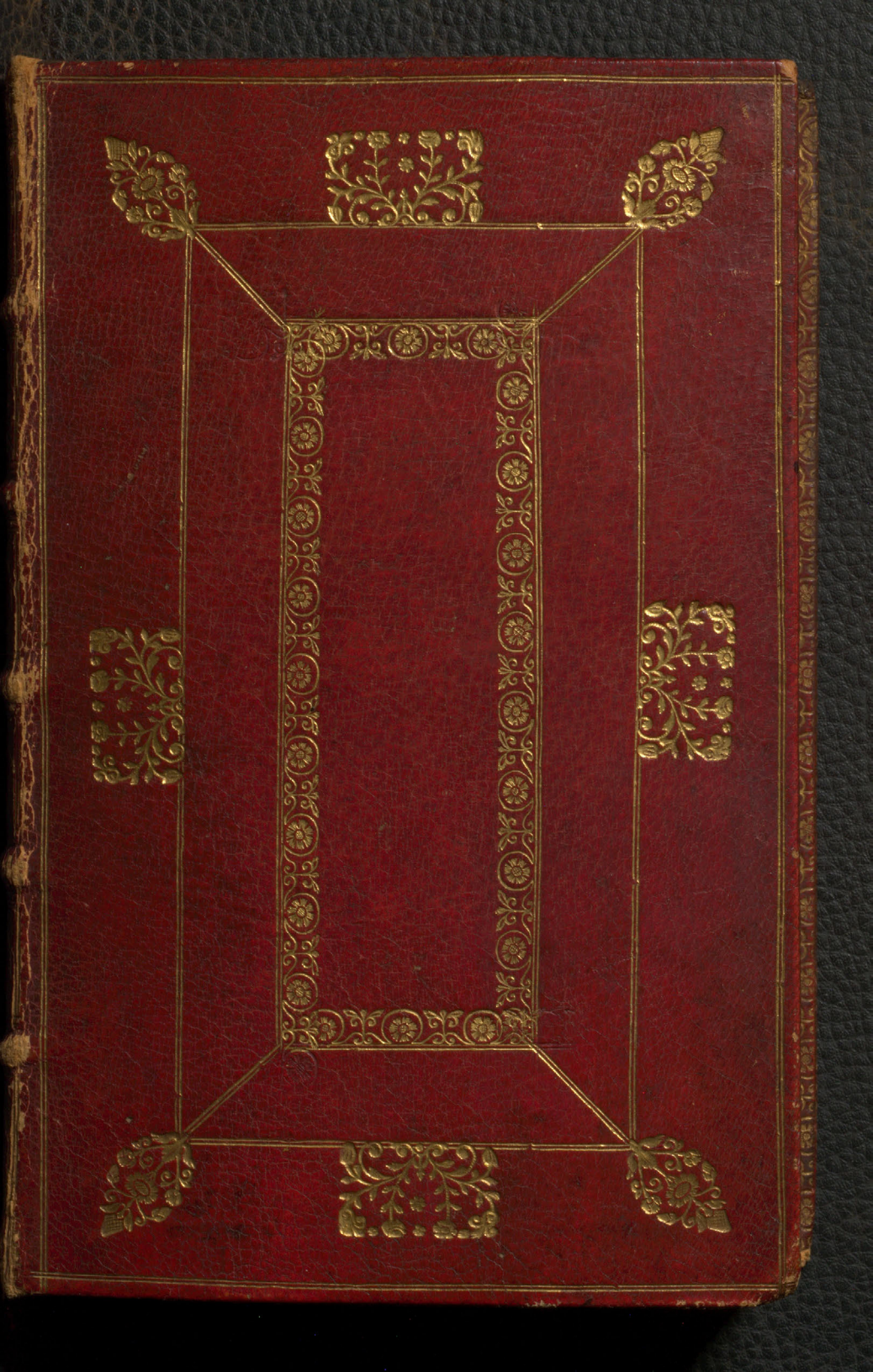


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To Explain the Old Art of FEELING the PULSE, and to Improve it by the help of a PULSE-WATCH.

In Three PARTS.

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III. The *Chinese* Art of Feeling the Pulse is describ'd; and the Imitation of their Practice of Physick, which is grounded on the Observation of the Pulse, is recommended.

To which is added,

An Extract out of *Andrew Cleyer*, concerning the *Chinese* Art of Feeling the Pulse.

By Sir JOHN FLOYER, Knight.

LONDON, Printed for *Sam. Smith* and *Benj. Walford*, at the *Prince*'s-*Arms* in St. *Paul*'s *Church-Yard*, 1707.

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TO THE QUEEN.

MADAM,

THEY who take a general View of the Wonders of Your MAJESTY's Reign, may think every Thing below Your Notice, that has not ſome relation to the aſtoniſhing Events which render Your MAJESTY more Glorious than any of Your Contemporaries or Predeceſſors.

But if we consider the more private and retir'd Virtues which adorn Your MAJESTY's Life, we may find that all laudable Endeavours, tho' of an Inferior Nature, as they are useful and advantagious to Mankind, have their share in Your MAJESTY's Observation and Encouragement.

This makes me presume to lay the following Papers before Your MAJESTY; in which I have drawn together, from the most remote Ages and Countries, such Remarks, as may, I hope, be useful to those who are born in Your MAJESTY's Dominions, by contributing

ting to make those Lives long, which You have made happy; and to give Rules for Health, without which we can have no Relish even of those extraordinary Blessings that are deriv'd to us from Your MAJESTY's Reign.

I might here inform Your MAJESTY, That the Author I have made most use of in this Treatise, obtain'd the Favour of three *Roman* Emperors, by his Labour on the same Subject; and that an Emperor of *China* did not think it unworthy of Him, to write a Book upon it.

But Your MAJESTY's great Goodneſs and Humanity wants no Excitements from Examples of this nature, it being the Glory of Your MAJESTY's Reign, That Your MAJESTY does not only ſurpaſs Your Great Adverſary in the Progreſs of Your Arms, but alſo in the Encouragement of Arts. *I am,*

MADAM,

Your Majeſty's moſt Faithful and Obedient Subject,

JOHN FLOYER.

THE PREFACE.

I *Have for many years try'd Pulses by the Minute in Common Watches, and Pendulum Clocks, when I was among my Patients; after some time I met with the common Sea-Minute-Glass, which I used for my Cold Bathing, and by that I made most of my Experiments; but because that was not portable, I caused a Pulse-Watch to be made which run 60 Seconds, and I placed it in a Box to be more easily carried, and by this I now feel Pulses; and since the Watch does run unequally, rather too fast for my Minute-Glass, I thereby regulate it; and add 5 or 6 to the Numbers told by the Watch: I also made a half Minute Glass, whose Case turns like a dark Lanthorn, and that was portable, and useful in feeling of my Patients Pulses, but that differed 4 beats from the Minute Glass, which I always kept at home as my Standard. After I had found this useful Measure for Pulses, I read over all*

that Galen *had writ about the Pulse, which I epitomis'd, and Corrected many of the old Errors, especially the old Notions about the Causes of the Pulse. After by my Pulse Watch I had found the most healthful Pulses, I easily discern'd what were the exceeding and deficient Pulses. 'Twas easie for me to take Indications from the hot or cold Pulses, and Cacochymias found out by the Pulse Watch, and to cure them by a contrary Regimen; the exceeding Pulses I learnt to reduce to their healthful state by the cold Regimen, and cool Tastes, and the deficient Pulses, by the hot Regimen and hot Tastes of Medicines. After I had reflected on what I had done I found my Notions hit with the* Chinese *Practice, about which I consulted many Printed Travels, but could never procure* Cleyer's Specimen Medicinæ Sinicæ, *till these Papers were Printing: I found in* Galen *all the useful and sensible* Phœnomena *about the Pulses, which I Collected and Explain'd according to the new Anatomy, and our present Philosophy.*

The Greeks *used their* ars Σφυγμικὴ *for Prognostications chiefly, and also a part of the* Semiotica; *but the* Chinese *also have made that a part of their* Therapeutics, *as well as of the other; for from the Pulse they take their Indications for cure, in which they excell'd the* Greeks. *I cannot but acknowledge the Industry*

and

and great Ingenuity of both Greeks *and* Chineſe; *but muſt declare, that I think both wanted a certain Rule or Meaſure by which they might know the natural Pulſe, and the exceeding and deficient Pulſe which depend on that, and for want of this Rule their Art is but a fair Conjecture; but by my Meaſure many Diſeaſes, if not moſt of thoſe which lie in the Blood and Animal Spirits, will be known, and the Indications taken from the Pulſe are certain and obvious.*

Tho' neither the Greeks *nor the* Chineſe *knew the true Fabrick of the Organs of the Pulſe, nor their true action and uſes, nor the Circulation of Humours, and the cauſes of it; yet the* Greeks *diſcovered the Pulſes of all Diſeaſes and Humours, and Paſſions: And the* Chineſe *founded their Art of Phyſic on the Pulſe and its differences; when more quick, great, frequent, was obvious to, the touch; and this produces the hot Diſeaſes, and the contrary Pulſes were evident which produced the Cold. The Cacochymias were the cauſes of all Diſeaſes with the* Greeks, *but becauſe thoſe cannot explain all Diſeaſes, and they are ſometimes very obſcure, or much mixed with one another: I ſhall endeavour to adjuſt the Cacochymia to ſeveral numbers of the Pulſe, by which they may be known, and will prefer the* Chineſe *Practice to that of the* Greeks *as*

moſt

most obvious and certain, and short, and assert that upon that we may build all the Practice of Physick. I can find by the Index in my Clock that it goes too fast, or too slow, without knowing the Mechanism of it, and I can add to, or take off the Weights, to regulate its Motion when it exceeds or is deficient; so it happens in the practice of Physick, our Life consists in the Circulation of blood, and that running too fast or slow, produces most of our Diseases. The Physician's Business is to regulate the Circulation, and to keep it in a moderate degree, suppose once in three Minutes; if it run oftner or slower, our Mechanism is out of order; but 'tis not necessary for us to understand the Motions of the Particles in the Blood, nor the Texture of the Viscera *and Organs; 'tis enough that I know by a hot Regimen and hot Tastes I can raise deficient Pulses, and by a cold Regimen and Medicines of a cool Taste, I can depress and sink the number of exceeding Pulses. By this Method all fine Hypotheses will be excluded from Practice, and a more certain and sensible Foundation will be laid for it; and we may give liberty to every Physician to talk what Philosophy pleases him best, we can never disagree in this, whether the Pulse exceeds or is deficient, and whether a hot or cool Method must be pursu'd; the greatness of the Disease, the strength of the Patient, and the quantity*

of

of the Medicines, as well as their qualities, will be known by the Pulse, and all the old Method of Practice and Rules for cure by contraries, will be comprehended under these two general Indications of stopping the Pulse or Circulation when they run too fast, or promoting them when they move too slow.

I have long since imbibed this Notion about Physical Matters, that our Senses can sufficiently inform us of all the most useful Phœnomena *whereby we know or cure our Diseases, or prognosticate concerning them. I have formerly shewn the usefulness of Tasting and Smelling for discerning the nature of Animal Humours, and the qualities of our Medicines which we use in curing of them: But in these Papers my Design is to discover what Advantages Physicians may have by a right use of the sense of Feeling. Painters very much improve the sense of Seeing by observing the great Varieties of Colours: Musicians improve the Hearing by observing the difference and proportion of Sounds; and* Galen *will teach us to know the several dimensions of the Artery, the Contraction as well as Dilution, and the Rithmus or Proportion betwixt them; and he positively affirms, that it will require some years to be able to discern the Contraction of the Artery, and a long Experience to distinguish a moderate Pulse, and the excesses and defects from it.*

Aristotle

Aristotle, de anima, chap. 9. *observes, that Mankind, of all Animals, has the most exquisite Touch, and that in the niceness of that he exceeds all other Senses. I cannot find any other Subject more fit to try the nicety of our Feeling than this of Feeling the Pulse, by which we may discern the greatness and smalness, the strength and weakness, the celerity and slowness, the rarity and frequency, the inequality or equality of the Pulse. I very much admire the diligence of the Ancients in distinguishing the uses and actions of the Pulsifick Faculty, tho' they ingeniously confess, they knew not what that was which produc'd the Pulse. 'Twas very difficult for them to get a true Idea of a natural Pulse, and so to retain and apply it for the measuring all defects and excesses by it in several Constitutions; and 'tis almost impossible to know whether a Pulse be more quick and frequent than ordinary, without a measure: These difficulties made* Celsus *so severe a Critick when he says,* Venis maxime credimus fallacissimæ rei, *because they are alter'd by so many Causes, Age, Sexes, Constitution, Baths, the Sun Passions, and the first coming of the Physician alters the Pulses, so that then we ought not to feal the Pulse; and we find that in the beginning of Fevers the Pulse is slow, but* Celsus *only cautions us that we do not believe a Person to be in a Fever by the celerity and frequency*

of

of the Pulse, because the Pulse may impose on us when moved so by external Accidents, quas venas conspectus medici movet quam mille res turbant ; *but this is a usual caution amongst the* Galenists, *to observe that no external Accident disturb the Pulse before we judge of the Disease ; and if there be any alteration to expect till it ceases, which it will soon do. 'Tis a great wonder to me that* Galen *did never count the Pulse, since by the exceeding Pulses we may well know Fevers, and the hot Intemperies and hot Cacochymia : And by the deficient Pulses we may know the cold Intemperies of parts, and the cold Cacochymia : As the Blood moves faster it produces the Choleric Cacochymias, and as it moves slower the Pituitous.*

Not only the Cacochymia will be discerned, but also the several natural Constitutions which shall be distinguish'd by the four secreted Humours, Choler, Salt Serum, Phlegm, and Succus Melancholicus ; *and the four compound Constitutions are when a plumpness is joyn'd with Choler, that is, the hot and humid ; and when Salt Serum and Leanness are joyn'd, then the Constitution is hot and dry : If Phlegm be joyn'd with Plumness then 'tis a Constitution cold and moist, or humid ; but if the Body be Lean and Melancholy, then the Constitution was call'd cold and dry : By the hot*

and

and cold the Ancients understood the different Rarifactions of our Humours, and by the dry and moist they meant the different quantities of Nutritious Humours, and all these they discern'd by the sense of Feeling, but I shall distinguish them by the several numbers of the Pulse: Not only the Cacochymias but most other Diseases may be distinguish'd by the Pulse; so by the number 100 *I know all sort of Fevers, Pains, Defluxions, if very great in young healthful Bodies, tho' Children will have more, and old Men fewer, about* 80; *the Reasons of this alteration is, that if the Pulse of the old be about* 60, 20 *Pulses excess will make them in a Fever; and because the Pulse of Children is very frequent, naturally about* 80, *we must add* 20 *or* 30 *Pulses to make it a Fever Pulse. A hectick Fever has the same number as other Fevers, but we must distinguish them by the smalness of the Pulse: In most Inflammations the Pulse is hard, in cold Diseases the numbers are deficient, and the Pulse is undose, in hot Diseases vibrating, in great Evacuations Formicant or Vermiculant Pulses: The lowest Pulse I have counted is* 55, *the highest* 132 *in an hectical Habit, in an obstruction of the Menses at* 17 *years, 'tis certain fewer may be counted, and more; but 'tis not easie to discover the greatest or fewest numbers that may happen. I have given a few*

Instances

Instances how far some Diseases will be known by the Paulse; more particular Instances the Reader will find in the Chapter of the alteration of the Pulse in Diseases; and he will find in the preceeding Chapters how the Non-naturals alter the Pulse; upon that Experience is grounded this Assertion, that the hot Regimen will cure deficient Puses, and the cold the exceeding: By curing, I mean by reducing the Pulse to its natural numbers. That which is chiefly to be cur'd is the preternatural state of the Blood and Spirits, these two are the immediate causes of the alterations of the Pulse, because they are the continent causes of the healthful Pulses. The Blood and Spirits are either too much rarifi'd and mov'd, or too much condens'd and slow in their Motion: For the first we prescribe Contraries, such is the cold Regimen; and for condens'd Humours, and obstructed Motion, the hot Regimen: And our frequent Experiences assures us, that by these Methods we shall reduce the Pulse to its natural numbers; from whence we may infer, that we have cur'd the preternatural state of the Blood and Animal Spirits. 'Tis a biting Reflection Sir William Temple *has given Physicians in his Essay upon Health,* p. 149. *Dr.* Harvey *gave the first credit, if not the first rise to the Opinion about the Circulation of the Blood, which*

was

was expected to bring in great and general Innovations into the whole Practice of Physick, but it has had no such effect: I'm satisfy'd that Dr. Harvey *did design a Tract about the Pulse, as he intimates, which if he had done he would have pursu'd his Scheme, and drawn it into Practice. I hope what I have done will excite the young Physicians to improve this Subject, which will be very useful, by improving the Notion of many Diseases, and will reduce them to a Circulation too slow or too fast, and we shall discover hereby the true and real effects of all Specifics, as they either stop or accelerate the Pulse. I hope the Reader will Friendly correct my Mistakes, and tho' I be insulted with the Ridicule of many Learned Men, as I was at first for my Book of Cold Baths, yet in time they will allow this Tract may prove very useful, as well as the other.*

THE

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ERRATA.

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CHAP. I.

Concerning the old Galenic *Doctrine about the Pulses, and the erroneous Notions maintained by it.*

HIppocrates was not ignorant of the nature of the Pulse, as appears by his Writings; and *Galen* affirms that he first called the Pulse σφυγμοὶ; but *Galen* himself was the chief Inventor of the Art σφυγμικὴ, and he writ 14 Books about it.

Hippocrates, in his Book of Humours, directs us to observe the Pulse among other Signs, and he calls them σφυγμοὶ, by which Name some of the Ancients described the Pulse when 'tis vehement in inflamed Parts, 'till *Hippocrates* called all Motions of the Arteries the Pulse. In the *Coacæ Prænotiones Hippocrates* mentions the Pulse in the Neck in Fevers; and in the same Book the Pulse in the Head in Fevers. He there also mentions the Pulse of the Lethargick (σφυγμοῖσι νωθρώδεσι); and in his

Book of Diet, he obſerves that the Pulſe and Breathing are proportionable to the Age of Perſons, and that they are Signs of Health and Diſeaſes, *(a)*. And in his Book of Womens Diſeaſes, he deſcribes the Pulſe of a Child-bed Woman when the *Puerperia* ſtop, ſee *(b)*. And in the Fourth of the Epidemics he calls the Pulſe in high Fevers quick and great, ſee *(c)*. And in the ſame Section he mentions a trembling and ſlow Pulſe, ſee *(d)*. And in the Second of the Epidemics there is this Obſervation, If the Pulſe be very evident in the Arm, 'tis a Sign of a *Mania*, or great Anger.

I have given all theſe Inſtances to prove that *Hippocrates* adviſed us to obſerve the Pulſe, that thereby we might know both our Health and Diſeaſes, and might alſo make Prognoſtications concerning the event of them.

Galen has writ very largely about the Pulſe ist Cauſes and Differences. I here think fit to give a ſhort Scheme of his

---

(a) Φλεβῶν διαφύξιες, καὶ ἀναπνοὴ πνεύμαλ@ καθ' ἡλικίαν, καὶ σύμφωνα καὶ διάφωνα, καὶ νόσε καὶ ὑγιείης σημεία.

(b) Σφυγμοὶ βληχροὶ, καὶ ὅτι ὀξέες, ἄλλοτε αἰεράμφοι, ἄλλοτε ἐλίποντες.

(c) Τοῖσι ὀξυπάτοισι πῦ πυρετῶν οἱ σφυγμοὶ πυκνότατοι καὶ μέγιστοι.

(d) Σφυγμοὶ τρομώδεες καὶ νωθροί.

Doct-

Doctrin about the Pulse, and to make some Remarks on the several Errors in his Notions and Anatomy. And in the following Chapter I will describe the true Causes of the Pulse, according to our modern Anatomists.

1. *Galen* believ'd, That the Heart and Arteries dilated themselves like a pair of Bellows, and drew in the Air and Blood, and that by their contractions they expelled the fumes; and that the Heart and Arteries opened and contracted at the same time, and moved together. This Hypothesis is contrary to Experience and Anatomical Observation, by which it appears that the Heart contracts when the Artery is dilated.

2. *Galen* asserts, That the right Ventricle of the Heart draws in the Blood from the *Vena Cava*, and the left Ventricle Air from the Lungs, and that in the contraction of the Heart the Blood passes thro' the *foramina* in the *septum medium* of the Heart; and that in the left Ventricle the Animal Spirits were made, and thence distributed through the *aorta*; this vital Spirit was called the *calidum innatum*, and *Hippocrates* thought it to be the Soul, of a nature like Light, produced from the Air and thin pure parts of the Blood.

3. The old Writers believ'd that the Heart gave the Heat to the Blood, and not the Blood to the Heart, which is contrary to Experience; and 'tis contrary to our modern Philoſophy to believe with the Ancients, that the Blood and Humors were moved by attraction, ſince all motion of them is by propulſion. *Eraſiſtratus* and *Aſclepiades* had got the true Notion of the motion of the Blood, for they aſſerted, That the Arteries did not move of themſelves, but by the Impulſe of the Heart, which injected Blood to diſtend them. But the common Opinion was contrary to them, *Non quia implentur Arteriæ diſtenduntur, ſed quia dilatuntur Arteriæ, implentur ut folles.*

4. *Galen*'s Opinion, That the vital Spirits were generated by the Heart is true if fairly explained, becauſe by the Pulſation of the Heart the Circulation and Digeſtion, and Rarifaction of the Blood are manag'd, and by a long circulation the Air which is contained in the Blood (as well as in all other Fluids) is very much rarified, and the volatile parts of the Blood by joining with that are ſpiritualiz'd, and from this mixture of hot rarified Air, and the volatile Oil and Salt of Blood diſtilled in a thin, clear *Limpha*, the

Ani-

Animal Spirits are generated, when ſecreted through the Glands of the Brain. This is the firſt uſe the *Galeniſts* aſcribed to the Pulſe.

5. The other uſe of the Pulſation was performed by the contraction of the Arteries, by which all Fumes were believed to be expelled, and this uſe we explain thus: The ſeveral Secretory Glands ſeparate ſome Humour from the Blood, ſuch as Choler, Spleen-Juice, Salt *Lympha*, Milky *Lympha*, Urine and Sweat, and many hot Fumes paſs through the Lungs and Pores of the Skin.

By the preceeding Account 'tis plain that the Ancients knew the true uſes of the motion of the Heart and Pulſe, *viz.* The generation of vital Spirits, and the expulſion of Excrements, tho' thro' ignorance of the cauſes of theſe motions they ill explained the manner of the motion of our Humours, and attributed them to attraction; but this Error, ſince it was diſcovered, has not much altered the practice of Phyſick, becauſe the old Phyſicians allowed a motion of our Humour as well as the Moderns, but they knew not the circulation of them.

6. We were taught by *Galen*, That we muſt admit nothing relating to the Pulſe

but what we evidently feel; but I cannot but believe his Fancy impoſed on him when he aſſerts, that he felt the contraction of the Artery, which he endeavour'd to prove, becauſe the Artery makes an Impreſſion in the Pulp of the Fingers, and he thought he felt the receeding of the Artery from that Impreſſion; but 'tis plain that we can diſcern no more in a natural Pulſation than the Stroke given to the Finger, and the interval betwixt each ſtroke by the numbering of the Pulſe in a minute, whereby we diſcern when the Intervals are longer or ſhorter.

7. The diſtinction of two Intervals was too curious, and not uſeful, the interior quiet betwixt the contraction and diſtention of the Artery is ſenſible, but the exterior betwixt the diſtention and contraction is inſenſible; and 'tis allowed that we cannot diſcern the beginning of the diſtention nor the end of the contraction, 'tis enough to conſider the Intervals betwixt the Pulſations.

8. The old Writers conſidered the proportion of the Celerity of the *Diaſtole* to the *Syſtole* of the Artery, and they called it a *Rythmus*; and they alſo obſerved the proportion of one Reſt to another, or of the Reſt to the Motion; and ſome Pul-

ſes,

ſes, they ſaid, had a good *Rythmus*, and ſome were without a *Rythmus*; but all this is too curious and not uſeful; theſe are Muſical and Geometrical Notions, which were adapted to Phyſick formerly, but not true ſenſible affections on our ſenſe of Feeling, and therefore muſt be rejected.

9. The old nice Obſervations about the Dimenſions of the Pulſe were uſeleſs, tho' taken from Geometry; ſuch are the long and broad, and narrow and deep, and ſhort Pulſes; theſe are not any of the natural Phænomena.

Galen conſidered the motion of the Pulſe as a Geometer would do, in reſpect of the ſpace, the Pulſe is great or ſmall, in reſpect of the time of the motion the Pulſe is ſwift or ſlow, in reſpect of the Interval 'tis frequent or rare; and he largely treats of the Inequality and Equality of the motion of the Pulſe; but theſe Geometrical Notions cauſed a great Error in reckoning up more Pulſes than were ſenſible. He complains of ſome Phyſicians in his time who drew all they had learnt in Muſick into their Treatiſe about the *Rythmus* of Pulſes; and the ſame fault he commits about the great and ſmall Pulſes, when he makes nine differences of the Pulſes, reck-

oning three to each of the three Dimenſions and deſcribe the Longitude, Latitude and Profundity of the Pulſe, and at laſt reckons up 27 Differences of the Pulſe in reſpect of the magnitude.

10. The moiſt and dry Pulſes are not perceptible, but may be ſuppoſed to be the hard and ſoft, and the hardneſs does not depend on the hardneſs of the Skin of the Artery, as the old Writers ſuppoſed, but on the fulneſs or obſtruction of the Artery in Inflammations and Pains, or on the Schirroſity or Conſtriction of the ſolid Parts, as in the Tympany, or any compreſſion, by which the circulation is ſtopt in ſome Parts.

11. What *Galen* ſays about the difference of Pulſes from the uſe urging, muſt be explained by the different irritation given to the right Auricle of the Heart, by the quantity and rarifaction, or acrimony of the Blood and Spirits.

12. The old Writers mention the Pulſe *Imparcitatus*, when the motion of the Artery beats ſlow in the beginning, and is after ſoon finiſhed, or the contrary. They alſo affirm, that in Fevers the diſtention of the Artery begins and ends quick, and grows ſlow in the middle; and theſe ſeem to me the Dreams of Ingenious Men.

13. Hot

13. Hot and cold Pulſes were reckon'd among the difference of the Pulſes; 'tis true, in the Hectical we feel a Heat in the Artery, but no more Cold appears there than in the reſt of the Body.

14. The *Pulſus Serratus* was deſcrib'd by the diſtention of the Artery, in ſome places more than in others; and generally the old Authors miſtook in nothing more than about the inequalities in one Pulſation, which ſeems to me impoſſible, becauſe our feeling cannot diſcern ſuch Motion and Difference in our Artery which never happens: For at the ſame time the Heart is contracted, and felt on the ſide, the Blood is injected into the Artery; and the Pulſe is felt in the Extremities, and the Blood runs equally thro' all parts of the Artery with the ſame Force and Celerity. If any inequality happen, it muſt be from the regurgitation of the Blood, when the Artery is obſtructed as in pleuritick Pains, the ſerrate Pulſe is obſerv'd.

15. It was the Opinion of the *Galeniſts*, That the Heat retires in Sleep, which muſt be thus explain'd, the Perſpirabile is evacuated by the warmth of the Bed, which reduces the Pulſe to its natural State towards Morning, after all Secretions

ons are perfectly made, and then the Pulse grows lesser and slower, and more rare.

16. The old Writers make the Celerity of the Pulse the only Sign of a Fever; but to that we must add the greatness and frequency, if the Fever be not Malignant; and I also find the number of the Pulse to be a certain Sign.

17. We cannot know the Antecedent Causes of Diseases by the Pulse, so a formicant Pulse shews a defect in Circulation, but not the Cause which occasions it, *viz.* that happens by Poisons, Plague, and hot Baths, which produce that kind of Pulse; so it is in the vermicular Pulse, which also shews that the Circulation fails, but not the Cause of that Pulse. *Galen* attended other Circumstances, of which the Pulse cou'd not inform him in discovering of some Distempers, or their Causes; for he, by mentioning the Name of *Pylas* to a sick Woman, found some alteration in her Pulse, by which he discover'd her Love-Sickness; and he guess'd at the Pleurisy in *Glauco*, by the *Mulsum* which stood in the Window.

By this Instance it appears, That the old Physicians did not trust to the Pulse in all Diseases; but they took Notice of all other

other Signs, how they agreed with the Pulſe in diſtinguiſhing Diſeaſes: So by the Pulſe we may know that any Perſon has ſome Pain or Inflammation, but by that we cannot tell in what part that is. By the Pulſe we may know Evacuations, but 'tis not poſſible to determine whether 'tis by the Menſes, or other Hæmorrhagies, and 'tis Diſingenious to pretend to know by the Pulſe that which cannot be diſcover'd by it: And 'tis a great want of Diligence or Perverſeneſs not to enquire thoroughly what may clearly be known by the Pulſe alone, or not to own what others by a long Experience have diſcover'd. It was an erroneous Opinion in *Sanctorius*, that we could not know the Coction of Feveriſh Humours, nor the peccant Humours in Diſeaſes by the Pulſe, for this is contrary to *Galen*, who ſays, Πάχος χυμῶν ἢ πλῆθος ἢ γλιχρότης ἢ δεμώτης σφύγμους ἄλλοιῶν δύναται, Lib. 1. *Of the Cauſes of the Pulſes*, Chap. 1.

We obſerve in many Inflammations that the Pulſe is hard, in cholerick Caſes vibrating, in Dropſies ſoft, in good Digeſtions the Pulſe is ſtrong, in Rarifactions of the Spirits the Pulſe is quick and frequent, and in the chilneſs of them the contrary ſlow and rare.

Galen

Galen rejects the full and empty Pulses, because he believ'd that the Artery was not fill'd with Blood, but with fumes and aerial Spirits, tho' in his Tract about the use of the Pulse, he says, he could bleed an Animal to Death, by cutting any small Artery; and on this Experiment he grounds his Assertion, that there is a Communication between the Veins and Artery: And he also observ'd the *Valves* in the beginning of the *Arteria Aorta*, so that he was not far from the discovery of the Circulation, but he was prejudic'd by the old Notion, that the Parts attracted the Humours, and that nothing was in the Artery but Spirits, and that the *Facultas Pulsatilis* moves the Artery as well as the Heart, but he ingeniously confesses that he knew not what that Faculty was.

I cannot but observe, That *Galen* brings too much Logick into his Treatise of Pulses, and mentions the Predicaments, and pretends to proceed in a Logical Method from general Notions, which swells his Treatise about Pulses, and making it less useful, and very obscure; but that short Epitome he writ, *ad Tyrones*, is well worth any Physicians Reading, being less mixed with Logical and Geometrical Notions

tions, which are not so useful in Physick as sensible Observations, deliver'd in plain Sense without Terms; but that was the Mode of the *Greeks* then, and *Galen* then blam'd the School of *Moses* and *Christ* for want of Logical Demonstrations in their Discourses of Laws, and he is fond of a general methodical Discourse about the difference of Pulses.

Since *Galen*'s time, till *Harvey*, this Art of feeling the Pulse, as to its false Notions in it continu'd the same; but since the Circulation of the Blood has been discover'd, *Harvey*, *Lower*, *Borellus*, *Bellinus*, and *Malpighius* have explain'd the Instruments and Causes of the Pulse, better than the *Galenists* had done; but we are still oblig'd to *Galen* for all his useful Observations about the Pulse. All I pretend to is the discovery of a Rule whereby we may know the natural Pulse, and the Excesses and Defects from that in Diseases; and from the Pulse we may take our Indications for the use of Diet and Medicines, as I shall prove hereafter.

CHAP.

CHAP. II.

Concerning the Pulse in general, its Nature, true Use and Causes.

THE Pulse is that sensible motion which is given to the Artery by the Blood, which the Heart injects into it.

The *Facultas Pulsifica* of the Ancient Writers is the Mechanical Contrivance of the several Parts which help and promote the Circulation, *viz.* the solid Parts are the Heart, whose Fabrick is muscular, the Arteries and Veins are continued Canals, the Organs of Respiration are in continual motion and compress the Veins, the Nerves are inserted into the Muscles of the Heart, and those for Respiration, the fluid Parts and the Blood, whose Particles have a globular Figure, and that continually moves through the circulatory Organs, and variously irritates them; the other Fluid is the Animal Spirits which move through the Nerves, and gives motion both to the Heart and Lungs.

Neither

Neither the Heart nor the Arteries have any power of moving themſelves, but the flux of the Animal Spirits thro' the Nerves into the muſcular Subſtance of the Heart is the firſt cauſe of the Circulation of our Blood, whoſe reflux to the Heart is promoted by the Reſpiration which preſſes by the deſcent of the Diaphragm, the Blood in the *Vena Cava* up to the right Auricle of the Heart, which being filled is ſtimulated to inject the ſame into the right Ventricle, and that immediately injects the Blood thro' the Lungs into the left Ventricle, and by the conſtriction of that the Blood is injected into the Arteries.

That part of the *Vena Cava* which joins to the right Auricle has muſcular Fibres by which it forces the Blood into the right Auricle, which is always bigger and of more uſe than the left, whoſe office of injecting Blood into the left Ventricle the motion of the Lungs performs.

The Arteries are diſtended ſucceſſively by the Blood as it paſſes through them; and that Impulſe given to them diſtends and vibrates them to make an Impreſſion on our Fingers, and that differs according to its Strength, Magnitude, Celerity, Frequency and Equality.

The

The motion of the Blood through the Arteries is compared to that of Water injected by a Syringe through a Pipe or Gut, and the preſſure by the Syringe anſwers to the preſſure given to the Blood by the conſtriction of the Heart.

The Arteries are thought to contain the 5th part of the Blood, if the whole Maſs be 20 pound, 5 pound is in the Arteries, and the reſt in the Veins. And *Borrellus* aſſerts, that the circulation is performed in 3 or 4 minutes, and 20 pound of Blood is circulated 16 times in an hour. *Lower* ſuppoſes that 2 ounces of Blood paſs in every Pulſation, and that there is 2000 Pulſes in an hour, and then the Blood circulates according to his computation 13 times in an hour.

Others ſuppoſe that 3 ounces of Blood is injected into the Arteries at every Pulſe, which cannot fill them, but that paſſes half a foot into the beginning of the Artery, which ſpace was empty, and there it gives that motion to the ſtagnating Blood which ſhakes the Artery and diſtends it: And this is *Malpigius*'s remark, *Arteriæ moventur per accidens, quatenus percuſſo interna fluido attolluntur & urgentur.*

The

The motion of the Blood in the Arteries is reckon'd three or four times as quick as in the Veins, which are four times as big as the Arteries.

The Artery, after its Dilatation by the Blood injected, is again contracted by its own annular Fibres; but the Artery contracts no farther than the Impulse of the Blood had distended it, which is only a restitution of the distended Fibres to their natural Tone, rather than an entire Contraction.

The Stroke or Dilatation of the Artery, and the Contraction are proportionable and equal; and the Interval betwixt the Strokes are regular and natural, and this is usually call'd the *Rythmus* of the Pulse, since the Artery contracts no farther than it was distended by the Blood injected; by observing the dilitation we may guess at the Celerity and Greatness of the Contraction.

If the Arteries were not conical Vessels, and if their Situations were strait, the Blood could not give so great a Stroke on the Artery; but because of their conical Figure, the Blood passes with difficulty towards the Veins, and the Blood is reverberated by the oblique Situation of the Artery; and that makes the Pulse

more evident in one part than in another; and where the Artery lies on a Bone, the Pulſe is made more ſenſible, as in the Temples.

The motion of the Blood is more ſwift in the beginning of the Artery, than in its Extremities, becauſe of the reſiſtance it meets with in the Arteries by the Blood contain'd in them; and by their conical Figure yett the Motion, becauſe of the fulneſs of the Artery, is ſoon tranſmitted from one end to the other.

The Blood is carry'd on thro' the Arteries and Veins by an uninterrupted Stream, becauſe the Contraction of the Artery gives a new Impulſe to the Stream, which laſts till a new Injection is made by the Heart; and the ſame Quantity as is injected, paſſes at the ſame time out of the Extremities of the Artery.

As ſoon as the Contraction of the Artery is finiſh'd, a new Injection of Blood is made by the Heart; ſo that when the Heart is in its Syſtole, the Arteries are dilated; and when the Arteries are contracted, the Heart is dilated; and betwixt theſe Dilatations and Contractions an Interval is neceſſary.

The Canals of the Arteries are cover'd with Membranes, and annular ſtrong Fibres

bres of a muſcular Nature; and their Tubes are ſoft, and may be dilated by the Blood: the Heart of it ſelf is like a Muſcle, and contracts its Fibres by the Influx of Animal Spirits, as all other Muſcles do; and 'tis alter'd in its Diſeaſes, as all other Muſcles be.

The Auricles of the Heart are alſo two Muſcles, which inject Blood into the Heart; the motion of the Auricles continues after the motion of the Venticles ceaſe in dying Animals; the motion of the left Venticle ceaſes firſt, and the right Auricule moves laſt, in which all Life and Motion begins.

The Office of the Auricles are to receive the refluent Blood, whilſt the Heart is in its Syſtole; and when the Heart is in its Diaſtole, the Blood is injected into its Ventricles; and when the Ventricles are in their Diaſtole, the Auricles are in their Syſtole, and *Vice verſâ*: This is *Harvey*'s Remark on the Office of the Auricles, *Motores primi ſanguinis ſunt Auriculæ, præfertim dextra, primum viveus & ultimum moviens.*

Since the Contraction of the right Auricle preceeds that of the Ventricle, no more Blood can be injected than that Arricle can contain; and the quantity of the

Blood muſt be computed by the Capacity of the right Auricle, and not by the Capacity of the Ventricles of the Heart. *Harvey* aſſerts, that the left Ventricle will contain one Ounce and half, two Ounces, or three Ounces, but the Auricle cannot contain half as much. In a Cows Heart the Ventricles contain'd four or ſix Ounces, the Auricle about two Ounces at moſt, which is more than the Heart of Man can hold, and their Auricles.

I have found by divers Experiments, That one Pound and half of Blood at leaſt may be allow'd to every twenty Pound of the Weight of the whole Body, which is twelve Pound to one Hundred and ſixty Pound Weight, and no more can paſs at one Pulſation than the right Ear can contain, which I compute at one Ounce of Blood in every Pulſe; ſo that in the ſeventy Pulſes, which will happen in one Minute in good Health, four Pound and ſix Ounces will paſs in one Minute; and in three Minutes thirteen Pound two Ounces, and the Blood may be allow'd to circulate twenty times in an Hour at leaſt; and the quantity of Blood in a Man of a Hundred and ſixty Pound Weight is at leaſt thirteen Pound.

This

This is Dr. *Harvy*'s Computation, the Heart makes a Thouſand Pulſes in half an Hour, and ſometimes two Thouſand, three Thouſand, or four Thouſand; and if one Ounce paſſes at each Pulſe in half an Hours time, eighty three Pound of Blood, and four Ounces will paſs the Heart.

The firſt Vibration of the Pulſe began in an Embryo, where it was excited by the External Heat of the Heart; and ſince that External Heat produc'd the firſt Pulſe, and ſince alſo the External Heat in the Air accelerates the Pulſe, I can probably aſſert, That the Blood rarify'd ſtimulates the right Ventricle of the Heart, and thereby alters the Circulation in all Animals: In Exanguious Animals the Heart beats very ſlow, as in Snails, but in the Sanguineous it beats more quick and lively, which proceeds from the different temper of Blood and Spirits, which variouſly move the Heart.

That the different qualities of the Blood do alter the Circulation, is evident by the different kinds of Diet and Medicines which alter the Pulſe; and this is ſufficiently prov'd by the Injection of different Liquors into the Veins.

The Blood is naturally of a Spumoſe Conſiſtence, which is turn'd into Bubbles by a Spirituous Air, which makes the Blood more compreſſible, and gives it a ſpringy Nature like the Air, *Liquida compreſſa quaquaverſum nituntur*: And thereby the Membranes of the Arteries are more eaſily propell'd outwardly, and diſtended.

The Bullulæ of the Blood move more quick in the Arteries, whereby they become more ſeparated, and look florid; but in the Veins they move more ſlowly, and appear of a blacker Colour by their Coheſion; ſo if the Orifice of a Vein be made ſmall, the Blood comes forth very florid.

The Blood propell'd to the Brain ſupplies new Animal Spirits, and promotes their Motion to all the vital Organs by the Motion it gives to the whole Brain and its Membranes, by the Pulſation of the Arteries, and Compreſſion of the Brain thereby. This is the ſpontaneous flux of the Animal Spirits into the muſcular Fibres of the Heart, which produces the reciprocal Contractions; and the Spirits are alſo irritated to vary their Contractions by the Qualities of the Blood injected into the Auricles and Ventricles;

and

and a distention always preceeds the contraction of the Cavity, and is the cause of it, the Muscular Fibres being distended endeavour to restore themselves to an easie Tone which is natural to them.

In a natural Constitution of Blood the Heat is moderate, and may be compared to the hottest Heat of the hottest Air in Summer. I cut the Jugular of a Dog and put the Ball of the Thermometer into the Stream of Blood, which raised the Spirits in it to the top of the Thermometer.

The Spirits in the Blood are rarified by Heat because they are of an elastick nature like Air; the same Heat rarifies the Animal Spirits contained in the Nerves which are of the same nature, and when the Spirits are rarified by Heat they inflate and agitate the muscular Fibres with greater force and celerity, and more frequently.

The natural Pulse is moderate as to Greatness, Strength, Celerity, Frequency, and 'tis also equal in all its Pulses, for the same quantity of Blood is injected by the same force, in the same time, and the Arteries are contracted in the same manner as they are dilated.

The circulation through the Veins is naturally promoted by the Impulse of the

Heart and Arteries, by the circular Fibres in the Veins, by the natural Tone in the habit of the Body, but most effectually by the compression on the *Vena Cava* and *Porta* by Inspiration, which dilates the Breast and presses the Belly, and thereby protrudes the Blood towards the right Ventricle of the Heart.

The natural Uses of the Circulation are,

1. To preserve the due Crasis and Fluidity of the Blood, and a due mixture of the viscid and serous parts.

2. By a long circulation to prepare all the useful secretitious Humours, *viz.* the Animal Spirits, Semen, Choler, Salt Lympha, Milk and Milky Lymphs, for the use of the Animal Oeconomy.

3. To expel all the excrementious Humours, as Urine, Sweat, and hot Fumes from the Blood.

Harvey makes two sorts of Causes for destroying of the Pulse, the one is a defect of the reflux of the Blood, the other is a stop of the efflux of the Blood, which produces a Suffocation by too much Blood.

1. The Affections and Diseases of the Heart, the Obstruction or Compression of the Artery or Veins alter the Pulse.

2. The

2. The *Cacochymia* in the Blood, if it be too acrid, ſalt, bitter or ſlimy, watry or *acerbe*, if the quantity be too great or deficient, if the conſiſtence be too thick or thin, all theſe vary the Pulſe.

3. The Animal Spirits are alter'd by external Cauſes and Diſeaſes, and a Malignity acts on the Spirits, as peſtilential Vapors do, which are ſaid to ſeize on the Heart, and all theſe after the Pulſe.

I tried the following Experiment to imitate the Pulſe and Circulation.

I injected into the ſmall Guts of a Cow, by Sir *Sam. Moreland*'s Hand-Engine, a ſufficient quantity of Water to fill them; and I laid the Guts round on the Graſs in 3 or 4 rings; the one end of the Gut was faſtned to the Engine which was ſet in a pail of Water, and about half a yard of the Guts faſtned to the Engine remained empty, as the upper part of the great Artery does; the other end of the Gut I nailed to a Stool on one ſide or edge of the Gut.

I obſerved that the Circle which was next the Pump vibrated like the Pulſe as oft as the Water was injected, and that the Water in the Guts moved forward upon every ſtroke of the Pump, and returned back a little after the force was ſpent.

And

And this regurgitation may be perceived in the Pulse of weak Persons, and in Obstructions of the Artery. I observed the Pulse lesser as well as the regurgitation in the second Circle of the Guts, and in the third and fourth no Pulse could be observed, as there appeared none in the Veins, which are Vessels continued to the Arteries.

I observed farther, That the Water was forced out of the Guts in a continual Stream, and every stroke of the Pump did accelerate and give a jirk to the Liquor, like the bleeding from an Artery cut.

The Gut was always full of Water, and when I laid a Brick upon one Circle the Pulse in the Gut felt hard.

The force of the Water injected protruded the Gut, and the annular Fibres by their natural restitution promoted the motion of the Water, and kept the stream from any interruption, tho' the Injection was made by intervals.

I made 47 strokes by the Hand-pump in one minute, in which time 14 Pints of Water passed the Guts; the Gut was one Inch Diameter, and many Yards long, as I remember 'twas the whole Ileon of a Cow.

CHAP.

CHAP. III.

Concerning the ſenſible Alteration of the Pulſe, or the differences of the Pulſe.

IF we conſider the quantity of Blood injected into the Artery by the Heart, and that alſo which is contained in it, before the Injection, the Pulſe is called great, high, or a full Pulſe; and the contrary, a ſmall, low or empty Pulſe: The great Pulſe we know by the great diſtention or protruſion of the Artery; and the ſmall, by the ſmall diſtention of the Artery; in great Pulſes the Artery appears like a large tenſe Circle, and in ſmall Pulſes like a ſmall and more flaccid Circle; by often feeling of the Pulſe of the moſt healthful in the middle Age, and in the Spring, we muſt get the Notion of a moderate Diſtention or *Diaſtole* of the Artery, and to that we muſt refer the preternatural, greater or ſmaller Pulſes, when they exceed the natural, moderate or middle magnitude of a Pulſe, or where that is deficient. By

a long

a long Experience we may get the Faculty of discerning the natural magnitude of the different Constitutions, which no Words can explain; and 'tis difficult to observe the full distention of the Membranes of the Arteries, and the several degrees of its flaccidity.

To a great Pulse not only a great quantity of Blood is necessary, but also a strong temper of Spirits to contract the Heart with great force

A great Pulse is also produced by a great rarifaction of the Blood and Spirits; and we may observe these several degrees of great Pulses, if the Spirits be much rarified the Pulse becomes a little greater than 'tis naturally; if the Blood be also much rarified the Pulse is much greater; and 'tis extreamly great in Fevers, where the Blood and Spirits are much rarified, especially if there be also a great quantity of Blood.

A small Pulse may depend not only on a small quantity of Blood, but on cool or weak Spirits, or cool, viscid Blood, or obstructed Arteries, or *Dyspnœa*, or stoppage in the Lungs, which hinders the circulation.

We know a great Pulse thro' fulness, by the hardness of the Artery in the interval of its Pulsation.

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We know a great Pulſe thro' rarifaction by the vehement Vibration of the Pulſe; and in a ſmall Pulſe from weakneſs, there is little force in the Pulſe.

Greatneſs joyn'd with Veheminence is a ſign of Strength, but with Heat 'tis a ſign of great Rarifaction of Humours; a ſmall Pulſe with Languor, is a ſign of weak Spirits; if joyn'd with Coldneſs, 'tis a ſign of little Rarifaction of Blood; with Hardneſs, 'tis a ſign of a Tenſe Artery by Pain or Obſtruction; and the Tenſeneſs makes the Diſtention leſs.

The Diſtention in the Veins is a ſign of a full Artery in Plethoric Bodies.

To diſcern the greatneſs of the Pulſe, we uſe only a ſuperficial light Preſſure by our Fingers on the Artery; and a great Preſſure ſtops a ſmall Pulſe, and a weak one; by the different Preſſure we know a great and a ſtrong Pulſe, by a ſuperficial the firſt, and by a ſtrong Preſſure a ſtrong Pulſe.

They who have denſe, hard, ſolid Fleſh, and ſtrong Limbs, they have ſtrong, thick fibroſe Muſcles in their Hearts; and by this we may know the ſtrength of the Heart; and on the contrary, they whoſe Habit of Body is flaccid and ſoft, and their Texture rare, and Corpulence little, they have

have a flaccid, extenuated and enervate Heart.

The farther the Artery is from the Heart, the leſs is the Pulſe; its force being refracted by the conical Figure of the Artery, and by the Blood contain'd in them; and when the Pulſe beats very languidly, we cannot diſcern the Pulſe in the Fingers, Temples, or Wriſts, as in Faintings, Hyſterick Symptoms, Weakneſs, and they who are near Death.

I ſhall hereafter Note divers Degrees of Preternatural Magnitude and Celerity, and frequency of the Pulſe, and as many Degrees of Smalneſs, Slowneſs and Rarity; and I ſuppoſe the moſt natural Magnitude, *&c.* to be when the Pulſe runs betwixt ſeventy and ſeventy five Beats in a Minute, all the Degrees above are Exceſſes in Magnitude, Celerity, Frequency; and the Degrees under are Defects from the natural State.

Note, That all great Pulſes depend on great Strength and great Heat; and in all the exceeding Pulſes, we find both Cauſes muſt joyn to make a great Pulſe.

The exceeding Pulſes are oft joyn'd with Weakneſs, and then the Pulſe is ſmall, and quick, and frequent, the Blood is as hot as in the other exceeding Pulſes; but the

Spi-

Spirits are too languid, and weakly contract the Heart. This ſmall and frequent Pulſe is in *Hectics*.

If we conſider the force with which the Heart injects the Blood, the Pulſe is either Strong or Languid.

A vehement Pulſe is both great and ſtrong, and we know it by preſſing it hard; and by the greatneſs of the Strokes, and the great Reſiſtance it gives to the Fingers.

In a languid Pulſe the Artery beats weakly, and it will not bear preſſing hard.

A moderate Strength is obſervable in the moſt natural and healthful Pulſes; and the greateſt Strength of any Pulſe is when the Artery beats about ſeventy or ſeventy five Pulſes in a Minute, in perfect Health; but if the Pulſe exceeds that Number, it is preternaturally ſtronger; if the Pulſe be deficient to thoſe Numbers, 'tis preternaturally weaker, and we know the degrees of exceſs and defect of Strength by the Numbers.

A vehement Contraction of the Heart makes a vehement Pulſe, and 'tis caus'd by a great rarifaction of the Blood and Spirits in Fevers, Pains, Inflammations, Paſſions, Madneſs, or in Obſtructions of

the

the Arteries, which irritate the Heart by a regurgitation of the Blood towards it.

The common Cauſes of vehement Pulſes are hot Air, hot Diet, Youth, hot Conſtitutions in thin Habits, vehement Motions of the Body or Mind, as Anger, hot Baths, Watching, Medicines of hot Taſtes.

A moderate ſtrong Pulſe is from healthful Blood, and great quantity of Animal Spirits.

A moderate ſtrong Pulſe is joyn'd with moderate Celerity, Greatneſs and Frequency.

The Motion of the Blood being in a Circle, if the Heart and Arteries move more vehemently, they will produce a greater and more quick Circulation; and if the Circulation be more quick, it muſt alſo be more frequent, ſo that theſe Pulſes depend on one another; and if the force by which the Circulation is made be remitted, the Blood will move more weakly, ſlowly, and rarely, and the Circulation will be carry'd on more rarely.

If the Spirits be weak, they make a ſmall Pulſe; but notwithſtanding if there be much Heat, which ſtimulates the Heart,

Heart, the Pulſe will alſo be quick and frequent, which will perform what is deficient for want of greatneſs.

A languid Pulſe depends on languid Spirits, which muſt be obſerv'd by a gentle Application of the Fingers, without much Compreſſion; and the languid Pulſe is oft ſlow and rare, if it be without a Fever; or ſometimes weak, ſmall and frequent, as in extream weakneſs, as in the formicant Pulſe, which oft ſucceeds the Vermicular.

If the Spirits be weak thro' defect of Spirits, the Pulſe is equal; if thro' Opreſſion, 'tis weak and unequal.

The frequency of the Pulſe is a ſign of the greateſt weakneſs of the Pulſe; and if the Spirits be extream weak, and the Blood cool, yet the frequency will rather increaſe; but when the Faculty or Spirits are but a little weaken'd, the coolneſs of the Blood will make the Pulſe rare.

The Pulſe before a *Syncope* is very quick, then ſmall, languid, ſlow, rare, intermitting, obſcure, vermiculant, formicant: And theſe Pulſes are ſigns of Imbecillity of Spirits, as an Impotency to voluntary Motion is alſo a ſign of it.

An intermitting Pulſe thro' the oppreſſion of the Organs, is great and vehement;

but an intermitting Pulſe thro' debility of Spirits, is ſmall and weak.

Theſe are the ſeveral Cauſes of languid Spirits.

1. Great Evacuations produces Languor of Spirits, ſuch are Hæmorrhagies, Diarrhæas, Diabetes, much ſweating in hot Baths, Faſting, Venery, and theſe make the Pulſe firſt vermicular, after formicant, intermitting, deficient.

2. The Spirits are diſſipated thro' long Fevers and Pains, Convulſions Sadneſs, Fear, Studies, Labour, they are languid in malignant Fevers; they are tir'd when the Organs of Circulation are oppreſs'd by Schirrus, Abſceſſes, Inflammations, Aſthma, Pthyſis, which cauſe unequal Pulſes.

3. The Spirits are languid in the cold Cacochymias, where few are generated, and few are extracted from a crude, poor, low, unfermented Diet.

4. The Spirits are languid when their Flux is hindred towards the Brain, Glands, or when they cannot flow into the Cardiac Nerves thro' Obſtruction, or Compreſſion of the Brains in Apoplexies, Palſies, Dropſies of the Head, Lethargies, or any Tumours which produce ſleepy Diſeaſes; the Cardiac Nerves are ſometimes op-

oppreſs'd, and the Auricle of the Heart by fat Tumours, in an Erupyema, Pus outwardly compreſſes the Heart, and Water in the Dropſy of the Breaſt.

5. Whatſoever hinders the Heart from its alternate Contraction and Reſtitution, or elſe hinders the Blood from flowing in and out freely, and diverts the Blood from flowing towards the Brain, produces an intermitting Pulſe, or imbecillity of Spirits, or Syncope; if the Arteries be obſtructed by a Stone there is great Pain, if by a Polypus, Weight, Pain, a defect of Blood, or Plethora, as well as the great Acrimony and Viſcidity of Blood or Windineſs, comvulſious Paſſions, and compreſſion on the Nerves by Tumours, produce an intermitting Pulſe.

If the Heart injects the Blood quick in a ſmall time into the Artery, it ſtrikes the Fingers ſwiftly; and when the Injection is ſlow, the Artery dilates ſlowly, and ſtays longer on the Fingers.

A Pulſe that is ſtrong, has always a Celerity joyn'd with it, becauſe the Blood by a ſtrong force is injected in a ſhort time; and it makes a quick Protruſion of the Veſſels, the force being vehement, and the Spirits vigorous.

The Pulſe is very quick in Fevers, where the Heart is irritated by much Heat, or elſe in Diairy's by the rariſaction of Spirits only.

The Celerity is joyn'd with a weak Pulſe in the formicant Pulſe, ſo after great Evacuations, there is little Blood in the Artery; and the diſtention is made leſs, but quick, and it receeds as quick.

The Celerity of the Pulſe is moderate in Health, and it is joyn'd with a moderate Magnitude and Frequency; and the degrees of Celerity may be ſtated by the numbers of Exceſſes and Defects as great Pulſes are, with which they are joyn'd.

Weak Spirits, thickneſs, coldneſs, ſizineſs of Blood, and Obſtructions of the Nerves and Arteries, make the Pulſe ſlow.

A little Celerity we cannot diſcern from the Natural, but that in Fevers is known by the quick Stroke, and its ſudden receſs from our Fingers, the quickneſs of the Motion in the Artery ſhews how ſwiftly the Heart injects the Blood.

Note, That by the quickneſs I underſtand the Celerity of the Diſtention of the Artery by the ſtream of Blood; but we cannot feel the ſwiftneſs of the Stream be-

becauſe of the Membranes betwixt that and the Fingers; but the Celerity of the Diſtention ſhews the ſwiftneſs of the Stream; not only the Heat and Rariſaction of the Blood and Spirits contribute to the Celerity, but alſo the Fluxility, or thin conſiſtence of the Blood, and the freedom of the Arteries from Obſtruction, Compreſſion and Conſtrictions.

In the diſcerning the Celerity of the Pulſe, we muſt rather obſerve the *Impetus* of the Motion, than the time of Dilatation, or the Space it moves thro'.

A quick Pulſe is familiar to great ſtrength of Spirits, or great Heat; and 'tis a ſign of one of them, to a Celerity, a moderate Strength is neceſſary for the moſt part; and Fevers are beſt known by the Celerity of the Pulſe: The Blood moves very ſwiftly in ordinary Fevers, in Health there is about ſeventy five Pulſes in a Minute, and in Fevers 100; ſo that if the Blood circulates ordinarily in 3 Minutes, in Fevers it circulates in 2 Minutes.

When the Artery feels hard or ſoft, that makes another difference in the Pulſe; it feels hard when 'tis obſtructed in ſome of its Branches, for then it ſtops in ſome of its Branches, and fills it; and this happens in Pleuriſies, and other

Inflammations by sizy Blood, or when the Membranes and Arteries are constringed and contracted by Pain, this hardness from Pains I may, for distinction, call it a Convulsive hardness; and this may be observed in the Melancholics, Hysterics, and nervous Pains. In Quartans and a Schirrus hard Pulses are observed from viscid Humours obstructing the Artery and *Viscera*; but besides the Inflammatory and Convulsive hardness, there is a Plethoric hardness from fulness of Blood.

In Fevers the Pulse feels sometimes hard and great, from inflammatory Tumors. *Galen* denies that there is any full Pulse, but he refers that to the hard and great.

A hard Pulse is not only from Inflammations, Obstructions, Tension of the Artery by repletion, from the Schirrus of the Liver, Spleen, Womb, Stomach, but drinking cold Water when hot, and from consumptive, dry Arteries, much Wine, cold Air, catching Cold when hot, all which produce sizy Blood to obstruct the Arteries.

Galen mentions a Fever with great Pains in a Tendon of the Fingers by a Bruise, and the Pulse was made hard by the Pain in the Tendon; he there observes

that

that Water-drinking and eating cold Fruits in Fevers, makes the Pulſe hard, which muſt be effected by coagulating of the Blood or Chyle.

The ſoft Pulſe is from an emptineſs in the Artery thro' a defect of Blood, or by the obſtruction of its motion in the Lungs; ſuch happens in *Peripneumonia's*, and other Diſeaſes of the Lungs: And a ſoft Pulſe is obſerved in Lethargies, Sopors, Mania's and Palſies, becauſe the circulation is ſtopt in the Head, and a ſoft Pulſe is obſerved in Quotidians, where the Blood is not ſufficiently rarified. The Pulſe is properly called *Pulſus in anis*; and there is generally a ſoft Pulſe in fat Bodies which are Phlegmatic, and in Women who are cooler than Men, and in old Age; in all theſe the Maſs of Blood is deficient, or not ſufficiently rarified to fill the Veſſels, or elſe the reflux of Blood is hinder'd to the Heart by its ſtagnation in the Head, or in the Lungs, or habit of the Body in fat Perſons and *Anaſarcas*. In dry Bodies the Pulſe is more hard, in humid or ſoft fat Habits the Pulſe is ſoft, the nervous Parts are moſt tenſe, and that makes the Pulſe moſt hard when ſwelled or inflamed, eſpecially if the Inflammation be near the Heart, or if the Diaphragm be inflamed;

but the carnous Parts being inflamed, the Pulse is not so hard, nor if the Stomach be inflamed.

The next difference of the Pulse is from the Intervals betwixt the Pulsations.

A frequent Pulse is when the time of the Intervals is short, and a rare Pulse is when the time of the rest betwixt the Pulsations is longer. This makes a distant Pulse, and this Rarity happens when the Blood is less rarified, or the Spirits weak; 'tis Heat which makes the Pulse more frequent, for the frequency of the Pulse depends on the frequent irritation of the Heart and Spirits by hot rarified Blood; and a rare Pulse wants that irritation, according to *Galen*'s Observation, Τὸ θερμὸν ταχυκίνητον τὸ ψυχρὸν βραδυκίνητον. The crebrity of the Pulse is familiar to weak Spirits, and then 'tis weak and frequent; or great Heat, and then 'tis great and frequent.

The most useful distinction of Pulses, and the most certain, is the difference we observe of the numbers of the Pulse in a minute; the most natural Pulse will have from 70 to 75 in a minute in perfect Health; if the Pulse run above those numbers the Body is over-heated, and the Blood and Spirits too much rarified, and

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the Pulſes are greater, quicker and more frequent, from 75 to 120 Pulſes in a minute; and all theſe numbers are the exceeding Pulſes, becauſe they exceed the natural numbers in a healthful Pulſe; and this happens in hot Conſtitutions, and hot Diſeaſes, and the contrary, which fails in the natural number of Pulſes, I will call a deficient Pulſe, which happens in cold Tempers and cold Diſeaſes; theſe Pulſes are alſo deficient in magnitude, force, celerity, and frequency, and they are weaker, ſofter, more ſlow and rare. I have obſerved them from 70 to 55.

I will here affix the following Table of Pulſes, diſtinguiſhable by their Numbers, whereby we may know the ſeverel degrees of Greatneſs, Strength, Celerity, and Frequency of Pulſes.

I will firſt deſcribe the exceeding Pulſes, and their Degrees.

Pulſes from 75 *to* 80.

At this Number the Blood and Spirits are a little hotter than ordinary, and for diſtinction-ſake I will call it Hot in the firſt Degree, and in theſe the Pulſe is a little greater, quicker, and frequenter than 'tis naturally.

Pulſes

Pulſes from 80 *to* 85.

I make this Number a hot Pulſe in the ſecond Degree; this exceeds the other in quickneſs, greatneſs, and more frequent than the former, which depend upon a different rarifaction in the Blood and Spirits.

Pulſes from 85 *to* 90.

I make the third Degree of hot Pulſes at the Number I have found the Pulſes of ſome extream hot Perſons in a morning, therefore here I muſt place the extream hot Conſtitutions, and all Numbers above this belong to extream hot Diſeaſes.

Pulſes from 90 *to* 95.

This Number I have obſerved in Diary Fevers, Pains, Inflammations, Ebullitions of Blood in all Defluxions; this Pulſe is feveriſh, very great, quick and frequent.

Pulſes from 95 to 100.

This Number ſhews an Intermitting Fever, or a Hectic out of the Paroxiſm; this

this Pulſe is feveriſh, more quick and great, and frequenter than the former.

Pulſes from 100 *to* 120.

This Number is in the Fits of Hectics and Intermitting Fevers, and the Pulſe is extreamly quick and frequent, and hot. The formicant Pulſe happens in malignant Fevers, 'tis weak and very frequent, ſcarce to be counted; this may be placed about 120.

Note, That we cannot well count above 140 Beats in a minute; but how many Pulſes may happen in a minute 'tis not eaſy to determine, nor how few; but I have mentioned no more than I have obſerved.

Note, That if the Pulſe be exceeding hot and ſtrong, all the difference above-mentioned will happen; but if the Spirits be weak, and Blood hot, the Pulſe will be ſmall, quick, and very frequent.

If the Spirits be ſtrong and Blood cool, the Pulſe will be moderately great, but ſlow and rare.

If the Spirits be weak and Blood cool, the Pulſe will be languid and rare, ſlow and ſmall.

If the Strength be great, and beat great, the Pulſe will be very great, quick and frequent.

Theſe are the four Compoſitions which happen by mixture of the Strength of the Animal Spirits, or their weakneſs with the hot and cold Tempers of the Blood.

If the alteration of the Blood and Spirits be moderate, the alteration of the Pulſe muſt be moderate; and if they exceed in quality, the Pulſe will alter as much.

A ſmall Pulſe is uſually joined with a ſlow and rare in cold Tempers and Diſeaſes. The Pulſe exceeds the natural healthful Pulſe from 75 to 90, which I divide into three Degrees, and from 70 the Pulſe is deficient to 55, which I alſo divide into three degrees. The moſt moderate and temperate Pulſe is betwixt 70 and 75 in healthful People, in the Spring, at middle Age, and their Pulſes are moderately great, ſtrong, quick, and moderately frequent, as in ſanguine Tempers, fat and plump.

The following Table contains the defects of the Pulſes from their natural Number, and theſe are diſtinguiſhable by the ſmaller Numbers of their Pulſations in a minute.

This

Pulſes from 70 to 65.

This is the cold Pulſe in the firſt Degree, and 'tis a more rare, ſmall and ſlow Pulſe than the natural, but 'tis but a little altered from the natural; external Cold and Faſting will ſink the Pulſe to this Number; this happens in pituitous, fat Bodies, a little ſanguine.

Pulſes from 65 to 60.

This is the ſecond Degree of cold deficient Pulſes, and the Pulſe is more rare, ſmall and ſlow, than the former; this happens to the fat, pale, cool Tempers about Sixty, as in ſerrous Tempers.

Pulſes from 60 to 55.

In this Conſtitution appears the extream chilneſs in the third Degree, in the moſt cachectical, and the Blood and Spirits are leaſt rarified.

The vermicular Pulſe is ſlow and rare in the *Cholera*, great Diarrhæa's, *Fluxus Menſium*, and all Evacutions which diſſolve the Spirits, therefore this Pulſe muſt be placed at the laſt Number of

ſlow

ſlow and rare Pulſes, I ſuppoſe that about fifty.

In a Syncope the Pulſe is ſmall, languid, unequal, and at laſt ceaſes with all Senſe and Motion, I ſuppoſe that at forty.

I cannot determine the Numbers of theſe very low Pulſes, for want of ſufficient Experiments; the Pulſe does not run frequently below ſixty, becauſe of our hot Diet and temperate Air; I have rarely met with any Pulſes below ſixty Beats in a Minute in Health. How far Diſeaſes will ſink I do not know.

By the Actions of any particular Part, and by their Secretions we know the temper of particular Parts, as the Stomach, Brain, Kidneys; but by the Pulſe we know the temper of the whole Body, becauſe that ſhews how the Blood is digeſted, and the Secretions perform'd, the greatneſs and frequency ſhew the degrees of Heat in the Blood; and the ſtrength of the Pulſe ſhews the ſtrength of the Animal Spirits, on both which the Circulation and Secretions depend; the Animal Spirits, like other ſecretious uſeful Humours, return into the Blood again, and they will produce a great and a ſtrong Pulſe, by rarifying of the Blood, as well as by their Influx into the Muſcles of the Heart.

Ani-

Animals differ in Conſtitution from one another by the different rarifactions of their Bloods and Spirits, and by a different proportion of their Viſcera; in ſome the Brain or Liver, or Spleen, or other Glands abound, and exceed in their Secretions more than in others; and the Choler gives Courage, but the Melancholy Fear.

We call all thoſe Pulſes unequal, when they are alter'd into different Strength, Greatneſs, Celerity, or Frequency, or Numbers unequal in the ſame time.

If the Blood be propell'd by the ſame Vigour and Strength by the Heart, and if the ſame Impulſes be given to it in the ſame diſtance of time, the ſtream of Blood paſſes in the ſame time thro' the Arteries, and then we reckon the Pulſe equal.

A ſingular inequality is in one Pulſe, and a ſyſtematical inequality in many Pulſes compar'd together.

The Cauſes of the inequality of Pulſes, or of any Irregularity in their Motions, are

1. From the weakneſs of Spirits, or the oppreſſion of them, or their irregular convulſive motion in Palpitations, Tremors, Hypochondriac Syncopes.

2. By

2. By the compreſſion, conſtriction, or obſtruction of the circulating Organs, the Heart is affected by Inflammations, Wounds, Ulcers, Tumours, Polypus, Worms in the Pericardium, or Pus, or too much Fat; the Blood is ſtopt in the Lungs by Tubercles, Inflammations, Schirrus, Ulcers, Impoſthumes, Aſthmatick Fits, and Hyſterics, Polypus; the *Aorta* is obſtructed by a Callus; the Arteries are oppreſs'd by Schirrous, Tumors in the Viſcera, much Fat, and Fleſh, the Varices ſtop the Veins, and the Capſula oft grows to the Heart, or Diaphragm and Lungs are joyn'd.

3. The Blood is in a great quantity, or coagulate, or viſcid, which ſtops the Circulation, and ſo does a defect in the due quantity of Blood.

4. The Pulſe is unequal by conſent of other Parts, as Head, Lungs, Spleen, Stomach.

Theſe are the collective Inequalities.

1. The *Pulſus de curtatus*, when one Pulſe is leſſer than another; and when they return to the ſame Magnitude again, they are call'd *reciproci Decurtati.*

Theſe Pulſes are unequal in Magnitude.

2. The

2. The Pulſes are unequal in Vehemence, when ſome Pulſes are ſtronger, and others weaker.

3. An intercurrent Pulſe is unequal in Crebrity, when one Pulſe happens more than uſual.

4. An intermitting Pulſe, when one or more Pulſations are wanting to the uſual Number; and if after the ceaſing of the Pulſe, it beats again, 'tis call'd a *Deficiens Reciprocus*.

5. The *Myurus*, is when one Pulſe is gradually leſs than the other till it ſtops, and 'tis ſometimes recurrent; this is an inequality in Magnitude.

6. The exceeding and deficient Pulſes mix'd, are reducible to the inequal Pulſes.

7. In the oppreſs'd Pulſe there is an inequality in the Celerity and Greatneſs; if the Oppreſſion be little, the Pulſes will be great and ſmall, with ſtrong and weak Pulſes mix'd.

Theſe are the Inequalities in one Pulſation, or Irregularities in it.

1. Some inequality happens in the Arteries of one Arm from that in the other, by the different Situation of it; and one Artery is more quick, vehement, or ſlow and weak than the other.

If an Artery be cut, the Pulſe is leſſened in that Part; and upon decay of any Part, the Blood moves faſter in the next; and the Blood being ſtopt in the lower Arteries, it moves more violently in the Carotides, as appears in the Green-Sickneſs by the Pulſation in the Neck.

2. The *Pulſus Dicrotus*, is when the Pulſe ſeems to ſtrike twice thro' ſome double irritation of the Heart, or obſtruction in the Veſſels.

3. A vibrating Pulſe is compar'd to the motion of a Dart, and 'tis caus'd by a vehement Contraction of the Heart, which makes the Pulſe greater.

4. The *Pulſus Capriſans*, is when in one Diaſtole there is a double Stroke; and the latter moves more vehement and quick than the former; this motion ſeems to be divided into two Parts, with an interpolated reſt; in this the motion of the Heart is hinder'd by ſulneſs of Blood, or obſtruction of the Artery.

5. The deficient Pulſe is when the Motion ſeems to ſtop, and is an imperfect contraction of the Heart; this is an inequality in ſmalneſs of Pulſation.

6. A vermicular Pulſe is when the Atery moves ſlowly, and is but a little diſtended; and it repreſents the motion of a Worm,

a Worm, who goes forward by twiſting and ſlow bending of it ſelf, or lifting up; this is a very ſlow and ſmall Pulſe.

7. A formicant Pulſe is like the motion of an Ant, who moves her Feet oft without going much forward; this Pulſe is the extream weak, ſmall, and frequent.

8. The undoſe Pulſe is when the Artery is mov'd by Parts, like Waves, if the undoſe Pulſe be weak, it ends in the vermicular; this undoſe is ſlow and rare from weak Spirits, or their oppreſſion by fulneſs of Humours; the undoſe is diſtinguiſh'd from the vermicular by its greatneſs; and as that diminiſhes, it ends in the vermicular, and this ends in the formicant, and thro' ſmalneſs and weakneſs it becomes very frequent.

9. The convulſive Pulſe is drawn like a Cord, and 'tis ſmall; but the vibrating Pulſe is diſtinguiſh'd from it, becauſe 'tis greater.

10. The trembling Pulſe is in Palpitations, and thro' weak Spirits, and is Melancholy when the Heart trembles and palpitates.

11. In all Diſtempers of the Lungs the Pulſe is apt to intermit, becauſe the Blood is ſtopt there; and the Pulſe is ſoft, becauſe little is injected into the Artery.

12. The excretory Pulse is the strong undose as in sweating, and all Evacuations at first.

13. The Pulse is obscure where we cannot count its Strokes, or well discern its Pulsations, as in very young Children, and very fat Persons.

Note, That all the Inequalities mention'd, are either ordinate or inordinate, observing no Order.

All the Inequalities in one Pulsation are properly irregular and unnatural Motions; and I have added many to the old Inequality.

Tho' the Blood runs faster in the beginning of the Artery, than in its Extremity, yet there cannot be observ'd what *Galen* mentions, different Motions in different Parts of the same Artery.

CHAP.

CHAP. IV.

Containing the Causes of the alteration of the Pulse by the Temperament, Sex, Age, times of the Year, and Habit of the Body.

THE continent causes of the Pulse are the strength of the Spirits, and the irritation of the Blood, and as internal Causes alter the Blood and Spirits, so they alter the Pulse.

1. The old Authors distinguished the several Constitutions by the several Qualities which occurred to our touch, *viz.* by the Qualities of hot, cold, dry and moist. The hot and cold ought to be appropriated to the temperament of the fluid parts, but the dryness, and humidity or softness, shew the Temper of the solid parts; by the dryness we describe the gracility or hardness; and by the humidity the plumpness or obesity of the habit of the Body.

Children and young Plants have moist Constitutions, or most nutritious Humors

contained in their ſolid parts, which makes them plump, fleſhy and full of mucous Nutriment; but old Men and dry Plants feel hard for want of Nutriment. As to Animal Humours they are beſt deſcribed by the particular Circulation which digeſts them, and prepares them for their Secretions; but chiefly by the taſte of the ſecreted Humours which return by a particular circulation into the Blood, and impregnate it with a particular Taſte and Tincture.

1. Choler is of a ſweet, bitter, acrid Taſte, and it returns into the Blood again with the Chyle, by the Lacteals. *Borellus* believes that it returns by the *vena porta*. He has prov'd that the Secretion of Choler is made by the Glands of the Liver from the Blood, as it were through the pores of a Sieve: From whence I infer, That Choler pre-exiſted in the Blood. And he farther demonſtrates, That one ounce of Choler is at leaſt ſecreted in an hour; and that 32 pound of Choler is ſecreted in a day through the Liver, and that there is in 20 pound of Blood 2 pound of Choler. By this Experiment 'tis evidently proved, that Choler does always remain mixed with the Blood. It is produced by a frequent circulation, and its

bitter

bitter acrid Taſte ſtimulates the Heart to a frequent contraction. This Choler is neceſſary to the craſis of the Blood, and the Digeſtion of the Meat, therefore by this Humour *Hippocrates* wiſely diſtinguiſhed the ſeveral hot Conſtitutions, for this gives an Acrimony to the Blood, and that ſtimulates a frequent circulation.

The Blood it ſelf is of a ſweet Taſte; and this obſcures the Taſte of the Choler mixed with it. The great Maſs of Blood is from the ſweet Chyle, and has the ſame parts, *viz.* the ſerous, oily and viſcid, but in a higher Digeſtion, and from the Chyle the Blood has its ſweetneſs. By the ſweet Taſte I will diſtinguiſh the ſanguine Conſtitution, and that Taſte will not irritate the Heart too much; in the ſanguine Temper the Blood and Spirits are well rarified, and they make the Pulſe great, moderately ſlow and full; and all the motions of the Body are moderate as well as thoſe of the Mind in the ſanguine Tempers; the Pulſe runs betwixt 70 and 75, the Face is florid, the Body plump, and Heat moderate, their Pulſes great, ſlow and full.

2. The cold Conſtitution depend on the Phlegmatic Humors, and their Pulſes are more ſlow and rare, and ſoft.

The natural *pituita* is the Chile new mixed with the Blood, or the Lacteal Lympha's ſecreted from it by the conglomerate Glands, and this is returned into the Blood again with the Chyle through the Lacteals, therefore the Blood is always tinctured by it; and the pituitous Conſtitutions depend on the great quantity or crudity of this Humour; and it gives either a mucilaginous ſweetneſs or ſlimy Acid, or watery crude taſte to the Blood, by the Phlegmatic Lympha, which appears to be of various taſtes when 'tis ſecreted from the Blood.

3 The Melancholic Humour is the third ſecreted Humour which *Galen* deſcribes as acid, like ſharp Vinegar; I ſhall make two Species of this Humour, acid Acrid, and the *Acerbe* or acid Styptic. The Pulſe of the hot Melancholic is quick and frequent, and hot; the Pulſe of the cold Melancholic is ſlow and rare. The Melancholic Humour is bred in the Spleen, and is thick, black, ſtagnating Blood, tinctured with an Acid, and is thence returned into the Blood again; ſome melancholic black Humors are ſecreted into the Stomach, Mouth and Lungs in black Spittle, and thro' the Glands of the Eyes in blackneſs thereabouts, the Vitriolic Acidity

dity may be evidently tasted in healthful Blood, and it has a private Secretion with the lacteal Lymphas, and it returns into the Blood again with it; the hot Melancholics oft vomit Bitter and Acid, and the Cold a rough Acid.

The choleric Tempers may be betwixt these Numbers 75 and 80, the Salt betwixt 80 and 85, the Phlegmatic betwixt 70 and 65, the cold Melancholy betwixt 65 and 60.

4. The Salt Lympha is the fourth secreted Humour, whose Office is to change the bitterness of Choler to a sweetness; to dilute the Chyle, and change it into Blood; and this Lympha is either Acid and Salt in the hot Scorbutic, or watry and crude, slimy in the Phlegmatic and Cachectick; this returns by the Lymphatics into the Blood again.

From these several secreted Humours remix'd with the Chyle, Blood, and Animal Spirits, and other Secretions, the fluid Parts of Animals, as well as the solid, have their several Temperaments: The Mass of Blood is chiefly Chyle, chang'd and mix'd with these secreted Humours.

The particular Natural, as well as ascitious temperament of our Humours, depends on the prevailing Quantity or Qua-

Quality of these Humours, which are remix'd by a private Circulation with the Blood.

The general Circulation produces the several particular Circulations abovemention'd; and these particular Secretions supply both quantity of Humours and irritating Qualities to help and alter the general Circulation.

Galen deduces all the Cacochymias from these secreted Humours, Ὅταν ἢδη ζανθῆς χολῆς, ἢ μελαίνης, ἢ φλέγματος, ἢ τῶν ὀρρωδῶν ὑγρῶν μεῖζον γίνεται τὸ σῶμα, κακοχυμίαν ἢ πλησθώραν καλοῦσι τὴν τοιαύτην διάθεσιν.

Hippocrates wisely and justly divided the Temperaments into the Cholerick and Phlegmatick; the first is known by the exceeding Pulses, and the last by the Deficient; the hot Constitutions have a hot, great, quick, and frequent Pulse: Interval Heat makes the Pulse greater, quicker, and more frequent, but not much stronger, or vehement; but if the Spirits be weak, the Pulse is neither strong nor great, tho' the Heat be Intense; besides, the general Pulse in hot Constitutions, there is some particular Note in the Pulses of hot Tempers, to distinguish the several Degrees, but by the Numbers of the Pulse they will be most evidently distinguish'd.

I shall

I shall make four original Constitutions, the Choleric and Salt are the Hot, the Phlegmatic and cold Melancholics, are the cold simple Tempers. But these may be mix'd with a lean and plump Habit, and make four compounded Constitutions.

The quantity and mixture of the simple secreted Humours, or their Qualities, acquir'd by being over digested or crude, produce all the Cacochymias.

The Number of the Pulses, in hot Cacochymias from 75 *to* 80.

This is the first degree of hot exceeding Pulses, and I will call it the hot Choleric, or Sanguine; the Blood and Spirits are more rarify'd than in the true sanguine temperate Constitutions (which stands betwixt 70 and 75 Pulses in a Minute) their Choler is vitelline, like the Yolk of an Egg; the Serum is a little more salt by the Evaporation of its thin parts, and the melancholic Acid is little alter'd; in this Constitution the bitter Acrid of the Choler prevails, and we may call this the bitter, acrid or choleric Constitution, either natural or ascititious by these Causes, hot Seasons, hot Air, much Exercise, hot Passions, Cares, Study, Watching, hot Medicines,

dicines, Excrements retain'd, hot Baths, hot Diet, these produce a quick, frequent great and strong Pulse, which produce much Choler, and that very bitter and acrid; the particular Note of the choleric Pulse is, that 'tis vehement and vibrating; and that the Acrimony of the Choler irritates the Heart to beat above 75 Pulses in a Minute; the Blood of such Persons is thick and florid, and their Urine and Face yellowish, and high florid Colour in the Cheeks, their Bodies are plump, feel hot.

Pulses from 80 *to* 85.

The salt Temper of the Blood is known by this Number, a great Heat evaporates the thin Serum, and the rest becomes more Salt; and this may be call'd the Salso Acid Constitution, and this happens in the Scurvy, the Gums are putrid, Ulcers in the Leg, the Spleen swells, the Blood and Spirits are infected with the Cacochymias, and produce a very quick Circulation; the viscid Choler becomes more eruginous by the mixture of a soft acid Serum, the Urine is Lixivial, and the general Taste of the Humours are Bitter and Salt, as is the Taste of a Lixivium,

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the ſalt Pituita was deſcrib'd as a Humour bred from Aduſt and bitter Humours, and mix'd with the Serum of the Blood, as *Aricen* affirms, the Pulſe is greater than in the Choleric, and more frequent and unequal.

Pulſes from 85 *to* 90.

At this Number I place the Atrabilis, which Humour depends on a mixture of a vitriolic Acid, (which may be taſted in the moſt healthful Blood) with very acrid Choler; this mixture makes the Spirits furious, and windy, and corroſive, and they move the Muſcles of the Heart furiouſly in *mania's*, which is produc'd when the acrid Choler prevails above the Acid; but if the Acid prevails, they are melancholy and fearful: This Choler is of a black Colour, Acid, acrid as Vinegar; the Pulſe is unequal, becauſe the Spirits are irregularly mov'd; but at laſt the hot Spirits evaporate, and then the Pulſe becomes ſlow and rare, and the Blood appears black and very thick; the Habit of the Body is thin, hairy, and Face Lead-colour'd, and Aſpect horrid; when the Blood is only black and thick thro' Heat and violent Circulation, 'tis only the beginning

ginning of the Atrabilis, which is from a duſt Blood; but when acrid Choler, and the vitriolic Acid are much mix'd with a duſt Blood, 'tis properly call'd Atrabilis; hence the Cancer, Piles, Varices, Leproſy are bred; and if a Fever be in this Conſtitution, it produces Quartans, Carbuncles, Gangrene, black Boyles.

I divide the melancholy Humour into two Species, the Atrabilis as above deſcrib'd; and into the tartar Acid mix'd with Phlegm, which is the cold Melancholy; the beſt Deſcription of Melancholy is given by *Hippocrates*, in his Book of Diſeaſes, he deſcrib'd the black Diſeaſe thus; they vomit black as the Dregs of Wine, after like Blood, ſometimes like the ſecondary Wine, ſometimes like the Juice of the Polypus, ſometimes like Vinegar very Acid, ſometimes they vomit a Saliva, or thin Pituita, ſometimes green Choler; there are Pains in their Sides, and a ſlight Fever, Pain in their Heads, their Legs have a weight or laſſitude, their Colour is black; theſe Symptoms are ſigns of great Heat, and I obſerve that *Hippocrates* calls it, πυρητὸς ἑλληχὸς; and ſince I find all Vapour Fits to have the Pulſe of a diary Fever, I place this Conſtitution next to the Fevers as the hotteſt Temper

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or Conſtitution; and *Galen* always affirms, that the melancholick Humours are bred from the aduſtion of Humours, γίνονται μελαγχολικαὶ χυμοὶ ἐκ συγκαύσεως αἱμάτων, tho' this be plac'd among the exceeding as a Cacochymia, yet the natural melancholic Humours muſt ſtand among the deficient Pulſes, as the old Writers place it.

As all the Pulſes above 75 are the hot Pulſes, ſo all below 70 are the cold Pulſes, and we may call them the Natural, or Preternatural cold Conſtitutions, or Cacochymias; the Pulſe of theſe pituitous Tempers in general is ſmall, ſlow, ſoft, and rare; the Cauſes of theſe cold Cacochymias are cold Air, Idleneſs, Sadneſs, Fear, long Sleep, cool Meats, Water-Drinking, *&c.* Women and Phlegmatic fat Bodies have the Pulſes mention'd.

Pulſes from 70 *to* 65.

Here I place the firſt degree of the pituitous Tempers, and they may be call'd the ſweet Phlegmatic or cool Sanguine, when this Phlegm abounds the Blood and Spirits are a little cool, and the Pulſe becomes more rare, the Skin is ſmooth and ſoft, the Body plump, the Choler in theſe

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is more ſweet than bitter, and little acrid, the Serum is more crude, and watry and ſlimy, the Chyle is more mucilaginous and watry; and then naturally Women and fat Bodies are of this Temper, their Complexion is White and Pale, without Thirſt or much Appetite; this is alſo the mucilaginous, ſlimy or pituitous Cacochymia, and the Pulſe is more ſlow, rare, ſoft than the Sanguine.

Pulſes from 65 to 60.

At this Number I will place the ſerous Conſtitution, the Spirits are cool and the Blood watry, their Phlegm is inſipid, the Extremities cold, and Urine pale; they are ſtupid in their Minds, and ſlow in their Motions; their Digeſtions are weak, and that breeds crude, inſipid watry Humours, and the Pulſe is ſlow and rare, and very ſoft, which is the Pulſe peculiar to hydropic Tumours, Cachexies; their Face is Pale, the Blood let out has much Serum, the Legs, and Belly and Face are apt to ſwell, they have many Obſtructions, ſpit much, and ſometimes have ſome Evacuations of Serum ſtopt, the Habit of their Bodies is ſoft and flaccid, and ſwell'd.

Pulſes

Pulses from 60 to 55.

At this Number I place the acid Phlegmatic or cold melancholy Tempers, there is much cold Wind in their Stomachs, and their Choler is porraceous and green, which is from a mixture of Acid with it, and that Colour in Choler is a sign of a weak Digestion; and a green Humour is oft vomited up in this State, the Acid prevails, the Pulse and Motions of the Body and Mind are slow, there is much Spit, little Thirst, the Water is Pale, the Body is Bound, the Skin is Cold and Dry, they find Benefit by hot Diet, and are offended by Acids and Cold; this Distemper is worst in *Autumn*, betwixt forty and sixty, the Pulse is slow and rare, and hard, because of the thickness of the Blood; and in this Constitution the Acerbity of Humours is most evident, and this Cacochymia is windy and sour: At this Number we must reckon the Old, whose solid Parts are dry, and unfit for nutrition; and in respect of their Fluids they are cold, the Blood and Spirits being but a little rarify'd, they are subject to a Stagnation of Blood, and their Spirits are weakly moved in Stupors, Tremors, the Stagnation

of the Blood breeds Apoplexies and Palſies, if the Blood be thick, ſizy, and thence the Face appears Blewiſh or Pale, their Extremities cold, thro' want of a quick Circulation, the watry Serum ſeparates from the viſcid Cake of Blood which breeds Catarrhs, Looſneſs, Hoarſeneſs, Coughs, Flux of Urine; their Digeſtions, and Sanguification and Secretions fail for want of a due Circulation; in theſe we obſerve a vitreous heavy Phlegm, which produces Cholic Pains, obſtruction in the Trachæa, and other Viſcera, in all decrepit and old Men of cold Conſtitutions, ſuch is that Conſtitution the old Writers call'd cold and dry.

By theſe ſeveral Conſtitutions I underſtand no more than a tincture of the Blood by a mixture with the ſecretitious Humours; and this continually alters with external Cauſes by Paſſions, hot and cold Diet, but that is to be eſteem'd a particular Conſtitution where the Pulſe runs more oft to one of the Numbers than to the reſt; but the Conſtitution of Humours alters with the Age, and different Seaſons of the Year; therefore we muſt chiefly conſider the Morning Pulſes to find out any particular Temperament in our Humours; and theſe Numbers which oft hap-

happen in the most temperate Time of the Year, and the best Health; and that Number which stands in the middle of the Latitude of our healthful Pulse, must be esteem'd the most natural Constitution of every Person. The Phlegm is oft digested into Blood, the Choler into Salt, or Atrabilis, but they never can return to Blood again; 'tis certain, that Choler is of less Digestion, and is produc'd by a less degree of Heat than Saltness, which seems to have its rise from the Acrid in Choler. Atrabilis is of a higher Pulse, greater Heat, more fermenting and windy than the salt Constitution, and the fury of their Spirits is equal to these in a diairy Fever; the sweet Phlegm is next to sweet Blood in Digestion, the crude slimy Serum seems next in Digestion to sweet Phlegm, the acid and vitrious Phlegm seems to be the most indigested of any Lympha, and the coldest in Quality; so in the Crude Juices of Plants, which are prepar'd the same way; the *Acerbe* is the crudest, the watry, slimy Subacid is the next and moderate degree of Crudity; and the slimy Sweet is the last degree of Crudity, next to the great sweetness of mature Fruits, all these several degrees of Crudity appears in Grapes; if we consider the Qualities

of Medicines, the ſweet Taſtes are moſt Temperate, the ſlimy Sweets are inclining to cooling in the firſt degree; the watry, ſlimy are more cooling, and the *Acerbe*, or acid, ſlimy and watry moſt cooling; ſo if we conſider the hot Taſtes, the bitter is leaſt hot; thr Salt or Pungent more hot, the ſharp Acid and Acrid being both very Volatile are Corroſive, as Spirits of Niter, and this is like the Atrabilis. This is the Ground or Reaſon of my placing the ſeveral Humours in the Order I have done; ſo *Galen* calls yellow Choler the θερμότατον, the Phlegm the ψυχρότατον: The Blood he makes a hot Humour next to Choler, and the melancholic Humour the coldeſt, next to Phlegm; and we find in the old Authors divers Species of Choler, when preternatural; the *Bilis vitellina*, *ceruginoſa*, and *atra orglaſtea*; theſe are bred in the Blood, but the *Porracea* in the Stomach by mixture of an Acid; and the old Writers made divers degrees of Phlegm, the ſweet, which has beſt Digeſtion; the inſipid, which is of moderate Digeſtion; and the Acid, which they thought coldeſt of all. According to theſe ſeveral degrees of Choler and Phlegm, I have noted ſuch degrees of Numbers as I found moſt frequent

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in ſeveral Conſtitutions; but this adjuſting the Numbers of the Pulſe to the ſeveral Qualities of our Humours, perhaps is no leſs difficult than uſeful. I have given my Conjecture and Experience.

In thoſe Perſons who have the beſt Tempers, the Blood and Spirits have a moderate Rarifaction, and their Pulſes are moderate as to Strength, Greatneſs, Celerity, and Frequency and Fulneſs; and there's no Inclination to the hot or cold Cacochymias, which I have above deſcrib'd.

Cold firſt alters the frequency of the Pulſe, then the Velocity, and at laſt the Greatneſs; the Heart is leſs ſtimulated by cold Blood, and therefore makes a ſmall Contraction, and a leſs Pulſe; ſuch ſort of Blood runs ſlow, and conſequently returns not oft to urge the Heart; the Spirits are weak in cold Tempers, which makes the Pulſe ſlow and weak; the want of rarifaction makes the Pulſe ſoft, the weakneſs of Spirits alters the greatneſs and celerity of the Pulſe chiefly, and not the frequency; and the Pulſe becomes very frequent when the Spirits are extream weak, tho' the Blood be very cold.

2. I will next consider the alteration of the Pulses, according to the difference of Sexes; the Pulses of Men are stronger and greater than those of Women, because their Spirits are stronger and hotter; the Reason of which is, because the seminal Lympha returns into the Blood of Men; and the Virtue of the Semen invigorates both the Body and Mind of Men, by which they become stronger, hotter, and more couragious than Women; the smell and taste of the Semen appears in the Flesh of Males, when they generate; and by castraction they lose all their fierceness and hot Tempers.

The coldness of the Blood in Females would make the Pulse rare and slow more than in Men, if the Passions of the Female Sex did not make their Pulses more frequent and quick.

Women given to a laborious Life of hot Tempers in hot Seasons, are of greater Pulses than Men in contrary Circumstances; but 'tis true in general, that Women are of colder Tempers than Men, because their Humours and Spirits are cooler, and they generally lead more idle Lives, and use a more cool Diet; they have a softer Habit of Body, their Bloods are more serose, and their

Menses

Menſes cool them, as all Evacuations do.

In Children and Women the cooler and moiſter Diet is moſt agreeable to preſerve their natural Pulſes, and a hotter and drier Diet is moſt ſuitable to preſerve that in Men; in moiſt or fat Habits the Pulſe is ſoft; and in dry, hard.

3. In thin Habits of Body, the Pulſe appears greater and ſtronger, but in the Corpulent ſmaller and weaker; in the thin Habits the Pulſe is not ſo much oppreſs'd with Fleſh as in the Fat; and the thin Habits are either Choleric or Hypochondriacal; and the Fat have a Phlegmatic and ſerous Temper, by which their Pulſes differ. The exceeding Pulſes in thin Habits ſhews they want a cold Regimen, and the fat Conſtitutions want the hot.

4. The ſolid Parts of old Men are dry and cold, the Fluids are cold and moiſt; both the Solids and Fluids of Children are hot and humid, or moiſt; all natural Conſtitutions muſt be preſerv'd by a like Nutriment.

Old Men have ſmall, ſlow, and rare Pulſes, becauſe their Spirits are weak and Blood cold, if they be of fat and cold Tempers; but the thin old, have ſmall and frequent Pulſes.

In Children the Pulſe is very frequent, quick, and ſmall; the Spirits are weak, tho the Blood be hot. *Galen* makes the Pulſes of Children great in reſpect to their ſmall Arteries, tho' it be ſmall in reſpect to the Pulſe of Men; the great Heat, and the ſmalneſs of Veſſels, makes their Pulſe more frequent than that of Men; but it may be obſerv'd, that the Pulſes of thin old Men, have as great a frequency as that of Children.

The Pulſe of young Men is great and vehement, thro' the Strength of their Spirits, and their Bloods abound with Choler and Heat, and their Arteries and Heart large, which in Women and Children are too ſmall for a great natural Pulſe, and their Bloods are more ſerous and fluxile, and therefore eaſily propell'd by the Pulſe; Crebrity is commonly joyn'd with all ſmall Pulſes; the Reaſon why Children are apt to Fevers, is, becauſe their Pulſe runs near the number of the Fever, through great Heat; by the Pulſe in the Fingers, *Harvey* obſerv'd, that Children were Feveriſh: This he affirms to be a certain ſign both in Children and delicate Conſtitutions; and ſince their Pulſes are always quick and frequent, they are very much inclin'd to Fevers.

Note,

Note, That the Heat of Children is reckon'd equal to that of Men, but it is joyn'd with a greater Humidity than the other, whoſe Heat is more acrid and dry: Children have humid and hot Tempers from ſerous Blood.

5. In the Spring the Air is more temperate, and the Spirits but moderately rarify'd, and the Blood moderately ferments, all which produces a great and ſtronger Pulſe in the middle of the Spring, as well as in *Autumn*, when there is alſo a temperate Air; but when a greater degree of Heat happens, the Pulſe is alſo quick and frequent, and at the end of the Spring the Magnitude and Strength decreaſe, as the Perſpiration increaſes; ſo that in Summer the Pulſes are languid, quick, and ſmall, and frequent; the Spirits then become weak by too much Perſpiration, tho' the Blood be then moſt rarify'd, on which the Celerity and Crebrity of Pulſes depends, and the ſmalneſs and weakneſs on the want of Spirits; for all Evacuations if great, ſink the Pulſe; towards the latter end of *Autumn*, the Greatneſs, Vehemence, Celerity and Crebrity of the Pulſe decreaſes; and in the beginning of the Winter the Pulſe becomes ſmaller, weaker, more ſlow and rare.

In

In hot Regions and hot Air the Pulse is as in Summer, and in the cold as in Winter; the natural, innate, vital Heat and Spirits is preserv'd by moderate Cold, which external Heat evaporates; but it stimulates the Circulation to a greater celerity and crebrity, the external Cold makes the Pulses greater by closing in the Heat, but extream Cold depresses the Pulse.

Near the Equator, the Air is most hot, and consequently the Pulses must be small, languid, quick, and frequent; and by my Computation, they will make 120 Beats in a Minute: About the 45 degree, the Air is most temperate, and the Pulse will beat most moderate, *viz.* 75 Pulses in a Minute. But in *England*, where we incline to the North 5 Degrees more, the Pulse will run betwixt 70 and 75; but under the Northern Pole, the Pulse will become smaller and weaker, but slow and rare by extream Cold, as it does in the Winter; and there the Pulse will beat but 30 Pulses in a Minute. See the Tables in the third Part.

Jan. 31. I found my Morning Pulse 83 in a Minute, after a moderate Exercise they were 100; but before Dinner, they were reduc'd to 76, which is my natural Pulse;

Pulſe; but after Dinner they came to 86, at 8 a Clock at Night they were 82.

In Winter all cold Diſeaſes increaſe, becauſe the Pulſe is then more rare and ſlow.

In Summer the acute Diſeaſes rage moſt, becauſe the Pulſe is then moſt frequent; the ſecretitious Humours abound moſt, when the Seaſon produces ſuch Pulſes as uſually occaſions them; ſo in Winter we gather the greateſt quantity of Phlegmatic Lymphas from a crude Chyle, which is produc'd from a ſlow and rare Pulſe: A quick and frequent Pulſe in the Summer produces Choler, the Evaporation of the watry *Serum* in the Summer produces a ſalt *Serum:* At the latter end of Summer the Heat is moſt exceſſive, and the Pulſe moſt frequent, which produces the Atrabilis towards *Autumn*; the gradual increaſe of the Heat firſt produces Choler, then Saltneſs, and after a vitriolic Atrabilarian Humour; a moderate degree of Cold produces a ſweet Phlegm, a greater amucilaginous watry Conſtitution, and the greateſt an *Acerbe* vitrious ſlime towards the coldeſt time of Winter.

The different Regions have Men of different Tempers, according to the Number of their Pulſes, the moſt exact healthful

ful Tempers are about the 45 degree of Latitude; these are sanguine, but the 50 degree is the first of the Phlegmatic Tempers, which is in *England* our most temperate Constitution; we must use a Diet inclining to Phlegm to preserve our natural Tempers; but if the Pulse exceed, we reduce it by a cool Diet, if it be deficient by a hot, in Winter, we use the hottest and most plentiful Diet in Summer, the coolest and most thin watry.

CHAP.

CHAP. V.

Containing the alterations of the Pulse by the external Causes, called the Non-Naturals.

TO a natural Pulse these three Things are necessary, a moderate Rarifaction in the Blood, a right Disposition in the circulatory Organ, and a moderate Influx of Animal Spirits to contract the Heart with a due force.

The Non-Naturals alter the Pulse by altering the Blood and Animal Spirits.

1. Hot Air rarifies the Blood and Spirits, and they stimulate the Heart to make a vehement contraction and quick circulation, which forces the Blood to return oftner, and stimulates the Heart to a more frequent contraction.

If the Heat of the Blood increase a little above the Natural, the Pulse becomes greater; but if it increases more, the Pulse becomes not only greater, but quicker; but if the Heat increases to the highest degree, the Pulse becomes very great

great and quick, and frequent. From this Obſervation I infer, That if I can meaſure the frequency by counting the number of the Pulſes in one minute, I can thereby meaſure the Heat of the Blood, and I can alſo meaſure the greatneſs and celerity of the Pulſe produced by that Heat.

A great and a quick and frequent Pulſe are peculiar to hot Tempers, if the Spirits be ſtrong which is requiſite to make a quick and great Pulſe; and if the Pulſe be frequent 'tis a ſign of Heat, tho' it be not great and quick.

Cold Air makes the Pulſe more rare, ſlow and ſmaller, by condenſing the Air contained in the Blood and Spirits, as the Cold condenſes and ſinks the Spirit in the Thermometer.

I ſate in a cold Place one morning, *Dec.* 4th, Wind Eaſt, and my Pulſe ſunk 10 Beats.

In cold Seaſons and cold Conſtitutions the Pulſe being retarded, the Serum ſeparates from the Maſs of Blood, and produces cold Defluxions.

In hot Conſtitutions and hot Seaſons the Defluxions are produced by Heat, which the quick, feveriſh Pulſe demonſtrates; and that forces the Serum through the Glands,

Glands, by rarifying of the whole Mass of Blood.

Cold makes the Spirits more sedate and less rarified, the degrees of Rarifaction and Condensation of our Humours we may discern by the Thermometer, which when it stands very high, it must shew a very frequent Pulse, as in Summer; and when low, a more rare Pulse, as in Winter. But the small changes of the Thermometer will not shew certain changes in the Pulse; for in *Nov.* 21. I found my Pulse at 86. when the Barometer stood at Storms, and the Thermometer at Frost. In *Nov.* 3. I observed the Barometer at Snow, and the Thermometer at hard Frost, and the Pulses then 72. By comparing these Observations I learnt that neither the Thermometer nor Barometer can give us any notice of the common Rising and Falling of the Pulse, tho' some alterations may happen when the Glass stands very high or low; 'tis Air, Diet and Secretions, which make the inequalities of Numbers every Morning, tho 'tis certain the changes of different Climates make great variety in our Pulses, and so do the changes of our Seasons. See more of this in the Third Part.

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I obſerved one day when the Thermometer roſe 15 degrees, that the Pulſe came from 72 to 82, after to 86 and 87, in a morning

The alterations of the Pulſe by Baths may be referred to the alterations by the Air, which is altered in our Bodies by Baths. Moderate hot Baths produce great, quick, frequent, and vehement Pulſes, by rarifying of the Blood and Spirits; ſo by Baths we may alter our Pulſes, and we may reſtore a εὐκρασία, revive the Spirits, increaſe the natural Heat, and diſcuſs ſome hot Spirits by them; for theſe Ends we may uſe them when we are very Hot to diſcuſs hot Vapours, and when Cold to heat our Humours; and they relieve Wearineſs, and inequality of Temper, and help all our Secretions, eſpecially that of Sweat. Theſe are the Benefits of tepid Baths, which ought to be reſtored with the frictious and unctious uſed by the old Phyſicians.

Immoderate hot Baths make the Pulſe ſmall, languid, quick and frequent; and afterwards as we cool they become ſmall, languid, ſlow and rare; the Pulſe is made weak by the Evaporation of Spirits, but quick and frequent thro' the Heat of Blood, and at laſt the Pulſe becomes formicant.

Cold

Cold *Baths* presently make the Pulse small, languid, slow and rare; and afterwards they strengthen or stupifie if continu'd too long: The cold Water produces these Effects by condensing the Air in the Blood and Spirits, if the *Bath* be so long continu'd as to stupifie, they make the Pulse more slow, small and rare; but if they be us'd moderately, they heat and strengthen, and afterwards the Pulse becomes great, vehement, quick and frequent, after the Chilness is over.

I have felt the Pulse before and after cold *Baths*, and have found some Pulses more rare, others more quick after cold *Baths*; and that in Summer the Pulse was stopt, but in Winter the Pulse was accelerated by them; so in warm Weather the Thermometer sinks by being immersed into a Spring, and in Winter it rises up to C in the Glass, if immersed into the same Spring; this Observation I must leave to ingenious Practicers to try how far it will hold, whether in all or some particular Bodies.

Some Persons are much surpriz'd by the cold Immersions, others Swim about and Labour; these Accidents make the Pulses to differ after cold *Baths*. Bathing after Dinner heats, in the Morning cools,

if continu'd a due time; the long Stoppage of Perſpiration, *Galen* ſays, produces a *Plethora*, and encreaſes the natural Heat.

A great quantity of Meat oppreſſes the Blood and Spirits, and makes the Pulſe inequal and inordinate; and among many great and vehement Pulſes there will be many ſmall and languid; but when there are more ſmall and languid than great and vehement, 'tis a ſign of a very great Oppreſſion; but if the Pulſe be ſmall and languid, without a mixture of the contrary, 'tis only a ſign of a decay of Spirits.

A moderate quantity of Diet makes the Pulſe great, vehement, quick and frequent, becauſe it rarifies the Air in the Veins of the Stomach and *Porta*, and thereby promotes the Circulation towards the Heart.

The hot Taſtes in our Diet promote the Circulation moſt; ſuch are the Acrid or Corroſives, as Muſtard and Garlick; the Aromatics as Ginger; the Bitters as Hops; the Vinous Sweet ferment our Humours moſt, as all Malt Liquors, ſweet Wines, Honey, and Sugar; ſo does alſo acrid and fetid Meats, as Oyſters, Anchovies, Gravies, Cheeſe.

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The cool Taſtes in our Diet cool the Blood and Spirits, and Air contain'd in them; and thereby they ſtop the Fermentation and circular Motion; ſo drinking Water, ſlimy Plants, and the Acids, and *Acerbes* and Stiptics, cool all our Humours, and ſtop their violent Motions and Fermentations.

I have oft found my Pulſe about 70 before Dinner in a Minute, after Dinner 86 or 90, as Fleſh-meats and Strong-drinks accelerate the Pulſe; ſo Water-drinking, Milk, Meats, Flower-meats, and cool Herbs, ſtop the Pulſe; ſo when I have eat a Meal without any fermented Liquor, the Pulſe is accelerated but 4 or 5 Beats.

I found the Morning Pulſe to exceed near 10 Beats, if I drank Ale or Wine at Night; Faſting, and being very Cold, reduc'd my Pulſe to 62, but it roſe to 75 after Dinner; this Obſervation ſhews, that 'tis beſt to eat no Suppers in exceeding hot Pulſes, except Water-gruel or Milk-pottage, or Wine and Water.

A ſparing Diet changes the Pulſe as a moderate Diet, but ſomething leſs in greatneſs, celerity and frequency.

Wine makes the Pulſe greater and quicker, becauſe it rarifies the aerial Bubbles

bles in the Blood; and a moderate quantity makes the Pulſes quick and more frequent, tho' an Immoderate oppreſſes the Blood and Spirits, and makes the Pulſe unequal.

I have oft admir'd that the Pulſe ſhould riſe ſo ſoon after Dinner, before the Chyle can arrive at the Blood; this I impute partly to the actual Heat of our Diet, but chiefly to the *Periſtaltic* motion of the Guts; the Heat of our Diet draws the Blood and Spirits towards the Guts and Stomach; for after eating they appear very Sanguine upon Diſſections, the quantity of the Nutriment and Chyle fills the Guts and Stomach, and that excites the Periſtaltic motion to preſs the Chyle thro' the Lacteals; and this preſſure will accelerate the Reflux of the Blood thro' the ſubclavial Veins, and at the ſame time the actual Heat of our fermenting Meats in our Stomachs rarifies the Blood in the *Porta* and *Cava*, and ſo accelerates its Motion to the right Auricle of the Heart; therefore the Heats of our Pulſes after eating are accelerated by promoting the Reflux of the Blood to the Heart: The motion and depreſſion of the Diaphragm helps the motion of Chyle, and when the Stomach is full, the Lacteals receive a great

great preſſure by Reſpiration; but I cannot think it probable, that that helps Digeſtion, becauſe Fiſhes and Birds want a Diaphragm, and yet Digeſt well; 'tis certain, that the Reflux of Blood is promoted by the Chyle in its diſtribution and preſſure thro' the Lacteals; if the Experiment be true, that by blowing Wind into the *Ductus Thoracicus*, the Pulſe of the Heart will be renew'd when 'tis ſtopt in a dead Animal; and this ſhews what the preſſure of new Chyle into the Blood can do, but the chief cauſe of the Acceleration of the Pulſe after eating is from fermented Liquors, becauſe when we do not uſe them, the Pulſe is very little alter'd by our Diet.

If the Chyle be not perfectly digeſted, and its Fæces ſecreted, the Relicts of that Digeſtion cauſe the Pulſe in a Morning to ſtand at the higher Numbers than uſual; but if any Evacuations happen by Urine, Sweat, Stools, Venery, they ſink the Numbers of the Pulſe, and make it undoſe or vermicular, as it happens in all Fluxes of Blood and *Serum*.

Great Hunger and Thirſt are ſigns of the Expence of Humours and Spirits, which makes the Pulſe languid, ſlow and rare; but if they be moderate, the ſuper-

fluous *Serum* is ſpent, and the Spirits become acrid, and the Blood is more rarify'd, which makes the Pulſe quick, ſtrong and frequent.

Wine changes the Pulſe ſooner than the ſolid Meats, becauſe 'tis ſooner diſtributed, and the Change is more to a celerity and greatneſs; this Alteration ceaſes ſooner than that from ſolid Meats, becauſe 'tis ſooner perſpired.

The Pulſe by moderate Exerciſe labours more, and becomes more vehement; and becauſe the Heat and Rarifaction of Humours increaſes, it becomes great and quick, and at laſt very frequent.

If Exerciſe be much, and it exceeds, the Spirits are exhauſted, and the Pulſe becomes languid and ſmall, and very frequent, by reaſon of the Heat.

If the Exerciſe be Immoderate with great Wearineſs, the Spirits and Heat are very much evaporated, and the Body cooled; and then the Pulſe is very languid and ſlow, ſmall and rare.

After half an Hours moderate Walking, in a Minute I have counted 112 Pulſes; ſo that the Pulſes was accelerated 20 or 30 Strokes in a Minute, and it fell again not long after the Exerciſe ceas'd; and before Dinner I counted but 70 Beats in a Mi-

a Minute; but after Dinner they were 90, before the Exercise in the Morning the Pulse was 76.

I rid 16 Miles in a cool Day, and the Pulse beat 90 in a Minute; therefore Walking is a greater Exercise than Riding, because it makes the Pulse beat faster.

The shortness of Breath upon Exercise stops the Pulse, and makes it irregular, smaller and weaker for some time.

A fat Man by Walking had 90 Pulses in a Minute, a thin Girl had a 110 by the same Walk, tho' the Morning Pulse was 75, and the Pulse sunk to the same Number before Dinner; after which the Girl of 12 Years had 83 Pulses as soon as she rose from the Table.

By frication of the Body, with Body-brushes, the Pulse usually rises 7 or 8 Beats in the Winter, but they did not continue above half an Hour; the frication was us'd in the Morning.

Sleep in the beginning makes the Pulse lesser and slower, and more languid and rare, because at first the nutritious Juices oppress the Animal Spirits which then are much spent, and after repleniſh'd by Sleep; and all voluntary Motion ceases in our Sleep, which accelerates the motion of the Pulse; if Sleep be continu'd too

long, the rarity and ſlowneſs of the Pulſe increaſes; but when the great quantity of Chyle is perſpir'd, and all other Secretions are perform'd, after a perfect Digeſtion of them, the Spirits are more increas'd, and the Blood is well rarify'd; ſo that the Pulſe in the Morning ſinks to its natural Number, and they become great and ſtrong, more ſlow and rare than they were in the Night, or in the beginning of Sleep.

The Pulſe of thoſe who awake is great, vehement and quick, little diſturbed, which makes it vibrate, but that ſoon ſettles to a moderate and natural Pulſe, if the digeſted Humours and their Secretions be rightly perform'd, the Animal returns to the ſame Pulſe and Weight; but the want of Digeſtion and due Secretions makes the Morning Pulſe to differ, as well as the Weight of all Bodies; but I could not obſerve that the Weight of the Body and the Pulſe did correſpond in their alterations exactly.

In Sleep the prone Poſture of the Body makes the Circulation eaſie, and no more Spirits are ſpent than what are neceſſary to the naturally continu'd vital Motions, as that of the Pulſe and Reſpiration; and the Motions neceſſary to diſtribution of

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the Chyle, and Secretions thro' the Glands and Lacteals, after long waking the Body is heated, and the Spirits are ſpent, and want a diluting Moiſture; much Nutriment makes us Sleepy as well as Wearineſs, and all Evacuations and a Preternatural Humidity makes us Comatoſe; long Waking ſpends the Spirits, and makes the Pulſe ſmall, weak, ſlow and rare; but an exceſs in Waking produces the Pulſe of an Ephemera; a moderate Waking only ſpends the exceſs of *Serum*, which clogs the Spirits, and then the Spirits become more rarify'd and active, and the Pulſe becomes more quick, frequent and ſtrong, when we Awake in a Morning.

As natural Sleep proceeds, the Pulſe becomes more rare and ſlow, and acquires a greater Magnitude and Vehemency till Morning; but if the Sleep be then continu'd too long, the greatneſs and vehemency remit, and the Pulſe remains more ſlow and rare.

In Sleep the Blood circulates more in the great Veſſels, and being leſs circulated thro' the Muſcles in the Habit the Stream is turn'd more towards the Stomach and *Viſcera*, which is the reaſon that Concoction is made better in the Stomach and Veins during Sleep.

In

In the Paſſions of Anger the Pulſe is great, vehement, quick and frequent.

In Joy the Pulſe is great, rare and ſlow, and not vehement, if the Joy be moderate; but in the Immoderate the Spirits are diſſipated or diverted, and the Pulſes are contrary.

In Sadneſs the Pulſe is ſmall, ſlow, lanquid and rare; the Spirits by a convulſive Conſtriction of the Heart ſtop the Pulſe; but in Joy and Anger the Spirits are much rarify'd, and flow violently, and in great quantity into the Muſcles of the Heart, to contract them with great force.

Great and ſudden Fear makes the Pulſe inordinate, unequal, quick and vibrating; but if Fear continue long, it has the ſame Pulſes as Sadneſs.

All immoderate Paſſions agitate the Spirits too much, and ſpend them, and render the Pulſe ſmall and languid.

A great Contention of the Mind ſpends the Spirits, but if it be moderate, it only ſpends the Humidity of the Lympha or nervous Juice.

The Pulſe in the Melancholic from Paſſion is obſcure, contracted, inconſtant, unequal, having an appearance of a deficient Pulſe, and 'tis ſometimes vermicular.

The

The Pulſe in melancholic Conſtitutions is generally hard, ſlow, and rare, and ſmall; the Blood is thick, and the Spirits weak, when they have Vapors, the Pulſe is like that in an Ephemera.

I counted the Pulſe after a great Paſſion of Anger, and it beat 104 in a Minute by drinking a Glaſs of Water, and faſting till Dinner; and ſitting in a cool Place it ſunk to 80, but the Pulſe did not ſink lower for 3 or 4 Days; this I take to be a Deſcription of the Vapors from Reſentment, when very great; and ſuch Fits are true Ephemera's from Paſſions, and ſometimes there is produc'd a hectical Fever from Sadneſs.

An inequal vibrating Pulſe is a ſign of ſome Paſſion, and this inequality may depend on the Conſtriction of the Veſſels.

In a Mania the Pulſe is hard from an abundance of bilioſe Blood; in a Mania from Atrabilis the Pulſe is hard both from Heat and Tenſion, and the Pulſe is ſmall becauſe of the Tenſion and Hardneſs; they are alſo quicker, and more frequent from the Fever and Atrabilis.

They who endeavour to ſuppreſs their Anger, have very unequal Pulſes; and ſo have they who are in any Trouble, and

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are aſham'd, and there is a Vehemence in their Pulſes.

I have oft obſerv'd an inequality in the Pulſes of a Lady, who was much concern'd for her Child's Life; many Pulſes were more frequent, and others rare.

The Pulſes in the hot Diſeaſes of the Head depend on a ſanguine or bilioſe Cacochymia, and a Coma and Dropſie of the Head on a ſerous Cacochymia; and theſe are known by the Pulſe belonging to each Cacochymia, and in Melancholics the Pulſe is weak and rare; in hot Diſeaſes, great, quick and frequent Pulſes.

We find that Fear hinders the Circulation, becauſe the Fearful will not Bleed after the Vein is open'd; Modeſty and Shame ſtops the Circulation alſo, as we diſcern by the Redneſs of the Face; ſolicitude of Mind is joyn'd either with Fear, Anger, or Joy, and accordingly it alters the Pulſe. Anger, Joy and Contention of Mind accelerate the Circulation; Fear, Sadneſs, Melancholy ſtop it.

All violent Paſſions alter the Pulſe by agitating the Heart vehemently in its Conſtriction; but if they continue long, and are vehement, they ſpend the Spirits, and produce weak, ſmall Pulſes.

The

The Ancients imputed Fatuity to the Refrigeration of the Head, with which the Heart conſents, and produces ſmaller, ſlower, and more rare Pulſes. In theſe cold Defluxions the Pulſes is ſoft from a Phlegmatic, hard from a Melancholic Cacochymia, which infect the Spirits.

The alteration of the Pulſe by Exerciſe ſoon ceaſe, thoſe from Wine and Diet laſt longer, and they are known by the vehemence and greatneſs of the Pulſe.

The greatneſs and vehemence of the Pulſe increaſes till the Nutriment is digeſted, and as ſoon as we have Eat they begin to riſe.

Hot Medicines produce high Pulſes, but they in time ſink again.

In the firſt degree of Heat the Pulſe is greater, in the ſecond quicker, and in the third more frequent.

In the firſt degree of Coldneſs the Pulſe becomes more rare, in the ſecond more ſlow, and in the third degree the Pulſe is leſs.

By our Pulſe we know, that hot Air, hot Cloths, and hot *Baths*, and hot Meats, and fermented Drinks, plentiful Eating, variety of Meats, of bitter Acrid, ſalt fætid

fætid Taſtes, or Aromatics, as well as Watching, ſtopping of Excretions and hot Paſſions, heat and over-rarifie both our Bloods and Animal Spirits, and conſequently accelerate our Pulſes; and on the contrary by deficient Pulſes we know that cold *Baths*, cold Diet, Reſt, Evacuations, much Sleep, cold Cloths, and Air, and the Paſſions of Sadneſs and Fear, ſink the Pulſe; therefore we uſe theſe in the cold Regimen, and the former in the hot Regimen.

CHAP.

CHAP. VI.

Containing the Alterations of the Pulse by Diseases.

1. I Have describ'd the natural Tempers of Humours, and the natural Constitution by the secretitious Humours, the Choler, and salt *Serum*; the Lacteal or Phlegmatic Lympha, and the *succus Melancholicus*; the mixture of these secreted Humours makes the Cacochymias, and their being over-digested or too Crude.

2. The Choler becomes very bitter, and very viscid and acrid, and this makes the choleric Constitution; and the Pulse runs betwixt 75 and 80, and the Habit of the Body is plump, and high sanguine, florid in the Face.

3 The Choler is mixt with Saltness, as in a Lixivium, which is Bitter and Salt, and the Pulse runs betwixt 80 and 85; the Saltness may be render'd very acrid or corrosive by too much Heat, which evaporates the watry Part, by which the Saltness is diluted.

4. The

4. The Choler may be mixt with a ſharp acid, but the great bitter and acrid muſt prevail more than the ſharp acid; and this makes the Atrabilis, the Pulſe is betwixt 85 and 90.

5. The phlegmatic Cacochymia is known by the deficient Pulſes, as the Choleric is by the exceeding; and the phlegmatic lacteal Lympha may be too Crude, as in phlegmatic Conſtitutions, which makes the Pulſe betwixt 70 and 65.

6. The phlegmatic Lympha may be mucilaginous, and mix'd with a crude *Serum*, as in Anaſarcas; and in this Cacochymia the Pulſe ſtands betwixt 65 and 60.

7. The *Acerbity* of the *ſuccus Melancholicus* is mixt with the phlegmatic and lacteal Lympha, and within this four phlegmatic Cacochymia, the Pulſe ſtands betwixt 60 and 55.

The hot bitter Acrids, are the hot and humid Conſtitutions of the old Writers, the Salt, and Atrabilarian are the hot and dry. The ſweet lacteal Lympha being too crude, is the phlegmatic Conſtitution, the ſerous and phlegmatic Lympha is the cold and humid. The *Acerbe* Phlegmatic, or vitrious Lympha, is the

dry

dry and cold Conſtitution, and this is the coldeſt and crudeſt of Humours.

We find the Pulſe of moſt Perſons upon divers external Accidents, tho' they be naturally of a choleric, ſalt, or Atrabilarian Temper, will run ſome of the lower numbers of the Pulſes, by which I conjecture the choleric and cold Cacochymia may be mixt, if with Blood, the Choler is then Red or Sanguine; if the Choler be mix'd with the crude lacteals Lympha, the *Bilis Pallida* may be obſerv'd; if the Choler be mix'd with a crude *Serum*, the *Bilis Seroſa* is produc'd; if with ſalt *Serum*, the *Bilis ceruginoſa*. If the Choler be mix'd with the *Acerbe* melancholic Juice, the *Bilis Porracea* is produc'd. Theſe are the ſeveral Species of Cacochymia from Choler, mix'd with all the other Humours. The old Writers call'd theſe the different Species of cacochimical Choler, *viz.* *Bilis rubra*, *Pallida*, *Vitellina*, *ceruginoſa*, *Glaſtea* or *Atra*, ſo the *Pituita* is mix'd with the other Humours; with the melancholic Juice 'tis call'd *Pituita Acida*; with the *Serum*, when crude or mucilaginous, 'tis call'd *Pituita Inſipida*; with Blood 'tis call'd *Pituita Dulcis*, with Choler 'tis *Pituita Amara*, with ſalt *Serum* 'tis call'd *Pituita Salſa*, and with Melancholy 'tis

call'd *Pituita Acidoacris*, or *Corrasiva*; the *Serum* and *Succus Vitriolicus Melancholicus*, may be over digested, or very crude. And there are four Differences reckon'd of *Atrabilis*, the first when mix'd or bred out of natural Melancholy, which is the *Atrabilis* bred from melancholic Juice; the second is *Atrabilis* bred in a choleric Blood, *Atrabilis* bred in sanguine Tempers; the fourth is *Atrabilis*, bred in a salt Blood. To these may be added *Atrabilis*, joyn'd with Phlegm, or bred in a phlegmatic natural Constitution, and *Atrabilis* joyn'd with *Serum*; and there are reckon'd four Species of cacochymical *Serum*, *Sanguineum*, *Biliosum*, *Pituitosum*, and *Melancholicum*, to which I must add viscid *Sulsum*, and *Aqueum* or *Mucilaginosum Insipidum*. In the mixture of the Cacochymias, we must first consider what is the natural Temper of any Person, and the Cacochymia to which he is subject; then we must call that the acquir'd Cacochymia, which is afterwards joyn'd with the former; and from the Composition of two Cacochymias, or three, or all four, many Diseases are produc'd; not only the several hot Cacochymias may be joyn'd, but the several cold Cacochymias may be mix'd among themselves; but also the contrary

trary Cacochymias are miſcible, as when a hot Conſtitution becomes Hydropical, or cold Melancholic, or when a cold Conſtitution runs into a Fever; in all theſe Caſes the Pulſes muſt be mix'd, and that Cacochymia which prevails, will incline the Pulſes to it.

Theſe Cacochymias are the Antecedent Cauſes of Diſeaſes, and if we know their Pulſes, we may know the Cauſe of the Diſeaſe in general; but cannot tell the Part affected, but by the Changes of its natural Qualities, or its Actions, or Excretions, Neighbourhood, Office, Situation, Connexion, by which we muſt know the Part affected.

From the ſeveral Cacochymias, the ſeveral Intemperies are produc'd, as *Calida*, *Frigida*, *Humida*, *Sicca*; and the Compounds of them, as the *Calida Humida*, *Sicca Frigida*, *Humida Frigida*, and *Sicca*; theſe may be known by the Pulſe, but by the Pulſe we cannot know the organic Diſeaſes in Conformation, as when the Figure, Cavity, Aſperity, and Levity of any Part is alter'd; neither can we know when the Magnitude is increas'd or decreas'd, nor whether the Number of Parts exceeds or is deficient, nor whether the

Situation be alter'd, nor the Connexion nor the Tone relax'd.

Neither can we know the *Morbus Communis*, or *Solutio continui* in the Fleſh, as Wounds, Ulcers, Contuſions; nor that in the Bone, as Fractures, Fiſſures, Caries; nor in the Nerves, as Punctures, Sections, nor the Ruptures of the Veins and Arteries, or Membranes, nor the Excoriation in the Skin; but we may know Pains by the Pulſe, we know in general Evacuation by the Pulſe, but cannot tell by what Part it is made, nor in what Part the Pain is ſeated.

Tho' we know the Temper and Strength of the Animal Spirits, yet we cannot know all the Animal Actions by the Pulſe; ſo we cannot know the Faults in the Judgment, Memory, Imagination; nor the defects in the Senſes, as Blindneſs, Deafneſs, by the Pulſe; but we may fully know the vital Actions of a healthful Circulation and Reſpiration by the Pulſe; but we cannot know the natural Actions alter'd by the Pulſe, as Nutrition, Hunger, Thirſt, Generation, nor the Tone of the ſolid Parts. From all the former Reflections I conclude, that the Diſeaſes of the fluid Parts in the Blood and Spirits are chiefly

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to be found out by the Pulſe; but the organic Diſeaſes, and the ſolution of Unity, muſt be known by the Signs of the particular Diſeaſes obvious to our other Senſes, as by the Qualities changed, the Actions aboliſh'd, diminiſh'd, or deprav'd, and by the Excretions from any Part, *&c.*

1. The Diſeaſes which depend on a *Plethora* of Blood, and other Humours may be known by a great, full, hard Pulſe, very ſtrong, and ſlow, and rare moderately; the defect of Humours we diſcern by a ſlow, weak and ſoft, or empty Pulſe; as 'tis alſo very ſlow and rare, unleſs ſome feveriſh Beat happen, and then 'tis quick and frequent; the Pulſe is ſlow and rare in a *Maraſmus* without a Fever.

2. At the Number of 95 or 100, I generally find all the Effervescences of Humours, which produce Defluxions, Pains, Rheumatiſms, Inflammations, Aſthmas, Gouts, and all Fevers.

In Pains in their beginning the Pulſe is great and ſtrong, and quick and frequent whilſt the Strength laſts; becauſe the Spirits being agitated by it, they expand and rarifie themſelves, and then violently contract the circulatory Organs, and quicken the Circulation to expel any thing which

offends any Part, for which Reaſon we ſay, that Pain draws Humours to a Part, or rather by a Conſtriction retains them in the pain'd Part; after the long continuance of the Pain the Pulſe is made languid, quick and frequent, and at laſt ends in great Languor, Smalneſs, and great Crebrity, which uſually accompanies all ſmall Pulſes; if the Pains be in a nervous Part, the Pulſe is ſmall, hard, quick and frequent; the greater the Pain is, the more the Artery is ſtretch'd like a Cord, and the Pulſations are unequal, intermitting, deficient, as well as very frequent, ſmall, languid; Pain is a convulſive Paſſion, and contracts the Parts it affects.

The Pulſe in the Gout is great, quick and frequent, which ſhews the Effervescence of Humours in the Fits by an Ephemera, or intermitting Fever; and with the one of them, the Gout is always joyn'd.

In the hot ſarguineous and choleric Tempers, the Pulſe in the Gout is more ſtrong and quick; but in the pituitous and melancholic Gout the Pulſe is more rare and ſlow; the Gout is a Defluxion of ſalt *Serum* thro' the mucous Glands of the Joints.

In great Catarrhs and Coughs there is a Defluxion thro' the Glands, caus'd by an Ephemera, or intermitting Fever; and the Pulse is as in those Fevers, great, quick and frequent. I have counted a 100 Pulses in a Minute in Colds, but it soon fell in three or four Days to 80; whilst I had a Cold this Winter, my Pulse stood from 80 to 90 in a Minute.

Small Pain without Inflammation, and in external Parts alter not the Pulse; but great Pains with Inflammation, and in principal Parts alter the Pulse, as in Fevers.

Pains at the Stomach make the Pulse unequal, languid, frequent; small Pains from the hot Cacochymia have exceeding Pulses; but from the phlegmatic, serous or cold windy Cacochymias, the natural Pulse is very little alter'd.

In the beginning of Inflammations, the Pulse is great and quick, and more frequent, and vehement; and as it increases, these increase with a Hardness and Vibration; in the State the Pulse is more hard and vibrating, but less, but not more languid, till the Spirits are spent; 'tis also more quick and frequent, but when the Spirits are spent, 'tis hard and small.

The nervous Parts are more ſenſible of Pain, and make the Pulſe more hard, leſs and ſerrine; they are more tenſe and hard by contracting and ſtopping up the Paſſage thro' the Artery. The nervous Parts in Pain conſtringe the Membranes, and all the Veſſels in them, and there is a Fever joyn'd with all Inflammations as well as a Pain; and the Blood being ſizy is more eaſily ſtopt in the end of the Arteries, and by that means keep it full and hard; Inflammations in the fleſhy Parts have leſs Pains, greater Pulſes. A denſe and hard Part makes hard Pulſes, if inflam'd, it makes them more hard, as ſoft Parts make ſoft, and ſo much the more ſo, if they be relax'd by moiſt Diſeaſes; in the Inflammation of the Liver, Spleen, Reins, Bladder, there is the like Pulſe; but ſome Symptoms may alter the general Pulſe, ſo they whoſe Diaphragm is inflam'd are ſubject to Convulſions; if the Lungs be inflam'd they are ſubject to Suffocations; if the Mouth of the Stomach, to a Sincope; if the Liver, to an Atrophy; if the Stomach it ſelf, to a nidoroſe Crudity; if the Reins, to a ſuppreſſion of Urine; and by theſe Symptoms the general Pulſe of Inflammations is alter'd. Small Inflammations, and thoſe in

Parts

Parts not ſenſible of Pain, alter the Pulſe leſs.

If an Inflammation ends in a Schirrus the Pulſe is ſmall, becauſe the Fever and Pain are over; but the Pulſe is hard, becauſe the Schirrus ſtops or compreſſes the end of the Artery, and there gathers the ſizy Blood.

The Pulſe in moſt Inflammations is hard and ſerratile, except in Peripneumonias, and Lethargies, in which the Motion thro' the Head and Lungs being retarded, or a little ſtop'd, the Artery muſt remain more empty; and the ſizy Blood ſticks in theſe inflam'd Parts, and the other Arteries become more ſoft.

In the Inflammation of the Lungs the Pulſe is great, languid, ſoft, like the Lethargies, but quick and frequent; 'tis unequal diſturbed, ſtop'd, undoſe, and ſometimes intermits, and is intercurrent; when the Fever runs high, the Pulſe is Feveriſh, but when there is ſomething of a Coma joyn'd with the Fever, then the Pulſe is leſs frequent; the inequality depends on the compreſſion, conſtriction, or fulneſs of the pulmonic Veſſels; 'tis ſometimes *Dicrotus*, but rarely, and 'tis not hard.

In the Inflammation of the Liver the Pulſe is quick, frequent, hard and vibrating.

In a Quinſie the Pulſe is great, frequent, quick, becauſe of the Fevers; 'tis undoſe as in a Peripneumonia, to which a Quinſie frequently tends; 'tis ſaid to be Tenſive or Convulſive as in Inflammations. If there be a Suffocation the Pulſe is rare and ſmall, and at laſt frequent and unequal; if the Tenſion prevail, it ends in Convulſions; if the Peripneumonia, it ends in that.

In the Pleuriſie, as well as in other membranous Inflammations, the Pulſe is hard from the ſizyneſs of Blood, and alſo from the Pain which conſtringe the Arteries; the *Pulſus Sarratus*, I apprehend to be from the Reverberation in the Artery, the Blood being obſtructed in the end of it, ſo that it ſtrikes the Fingers both in going down the Artery, and after Reverberation, and that may make the appearance of a Saw: In this Pulſe *Galen* ſays, one part of the Artery is higher than the other.

The Pulſe in the Pleuriſy is alſo quick and frequent, and not very great, neither languid, nor vehement; the quickneſs and frequency depend on the Fever, which is higher in the Bilioſe than the pituitous

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Conſtitutions, the hardneſs hinders the greatneſs; when the Artery is kept full, the Diſtention cannot be much more, nor eaſily perceiv'd; the bilioſe Tempers are more prone to a Delirium, the phlegmatic to a Coma, and theſe alter the Pulſe; when the Pulſe becomes more frequent, it turns to a Peripneumonia, or Sincope; when more rare, to a Sopor or Convulſion. If the hardneſs be leſs, 'tis a ſign that the Matter will ſoon ripen; if the hardneſs be great, 'tis a ſign of much Matter, and a crude Pleuriſy; and if the Spirits be weak, 'tis more dangerous; but if they be ſtrong, it will hold long in Maturation, or end in a Pthyſu or Suppuration.

The beginning of Suppuration is in the State of an Inflammation, and is like that Inflammation, vibrating and hard; and this is a ſign of inward Inflammations, as well as outward; when the Matter is digeſted, the feveriſh Pulſe remits, and it remains Hectical; the Pulſe is oppreſs'd and unequal, ſometimes great, vehement and quick, when the Blood is infected by the purulent Matter; but when the Spirits are faint, and the Matter diſcuſſed by Sweat or Looſneſs, the Pulſe becomes the contrary; when the Impoſthume

hume breaks, the Pulſe is languid, ſlow, rare, becauſe Vomiting and Swooning happen then, after the Pus ſtimulates great and vehement Pulſes.

The Pulſe in a Pthyſis is uſually ſmall, languid, quick, and very frequent and ſoft, the Spirits are weak, the Fever is hectical, and they uſually have 100 Pulſes in a Minute in hectic Fevers; there is an outward Inflammation in the Lungs, which accelerates the Pulſe as well as the Fever, which is continu'd by a putrid Sanies in the Tuberculas, their Blood is ſizy, as in all Inflammations. The Evacuations make the Pulſe ſoft.

In all Marcors from an obſcure Inflammation in the Lungs, or from a Syncope of the Stomach and Heart, the Pulſe is languid and frequent, which the *Galeniſts* call *nutantem Pulſum*; but the Marcor of old Men makes the Pulſe rare, till an Extream weakneſs makes it frequent, when the Pthyſu is chronical, and the Conſtitution cool, and there are many crude Tubercula with little Impoſthumations; I have obſerv'd the Pulſe to run about 80, but as the Pthyſu declines, the Pulſe runs above 100, and eſpecially in the Fits of the Hectic.

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The Pulſe of the Phrentic is ſmall, rarely great, and becauſe the Membranes are inflam'd 'tis hard, and very quick and frequent, which the Fever occaſions; the Spirits are ſpent by violent Motion, or the Brain is oppreſs'd by much Blood, which makes the Pulſe weak, it ſeems to tremble, and to be cut off with a Convulſion; this Trembling is from a general Convulſion, which ſometimes lifts the Artery up, and pulls it down; its Crebrity is a ſign of a Syncope, the Pulſe is ſeldom undoſe, becauſe the Artery is hard, and the Inflammation is from a bilioſe Humour, the Blood is very florid, and is found upon Diſſection in great quantity in the Head.

The Pulſe in a Lethargy is like that in a Peripneumonia in greatneſs, weakneſs and ſoftneſs, but 'tis ſlower, and more rare, and leſs unequal, intermitting more than intercurrent; 'tis undoſe in all Sopors from the oppreſſion in the Brain, the Blood is very ſizy, as in the Peripneumonia, and the Lethargy requires frequent Phlebotomy; this Sizineſs the old Writers call'd the pituitous Humour, becauſe 'tis the Chyle thicken'd, as in other Inflammations; and I reckon the Lethargy a Species of Inflammation, and has uſually a Fe-

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ver joyn'd with it, becauſe the Blood is ſtop'd in the Brain, the Pulſe is ſoft as in the Peripneumonia.

In a Coma, or mix'd Caſe of Lethargy and Phrenſy, the Pulſe is oppreſs'd, the Spirits are much agitated by the Phrenſy, the Pulſe is obſerv'd to be undoſe in comatoſe Affections; but if it incline to the Phrenetic, the Pulſe is harder, quick, frequent; if to the Lethargy 'tis ſofter, and the Pulſe is leſs quick and frequent than in the Phrenſy, and leſs ſtrong; but they are not cut off by a Convulſion as the Phrenetic are.

The motion of the Spirits is oppreſs'd in a Lethargy, and tho' the Inflammation would make the Pulſe great, quick and frequent; yet the Oppreſſion alters it to languid, ſoft, undoſe, and intermitting; the Pulſe is the ſame in a Catoche, as in a Lethargy; but 'tis not ſo weak, ſoft, and unequal.

A Rheumatiſm is a general Inflammation of the Limbs and fleſhy Parts with a Fever, and great Pains, and have the ſame Pulſe as they. I have obſerv'd many rheumatic Pains without Hardneſs, as they are ſometimes without Fever.

In the Inflammations of the Bladder and Womb, the Pulſe is ſaid to be hard.

In

In an Iliac Paſſion there is great Pain and Inflammation of the Ileon, and a Fever is ordinarily joyn'd with it.

The Pulſe in the Inflammation of the Diaphragm is obſerv'd to be ſmall, hard, very much, and very frequent, with a Delirium.

In the *Cholica bilioſa*, the Gut is inflamed, and there is a feveriſh Pulſe: The Inflammations of the Muſcles of the Belly will not make a hard Pulſe, but great, quick, frequent.

The Apoplexy is an Inflammation of the Brain, and a Palſy is an Inflammation on the Nerves, and both joyn'd with an intermitting Fever in the beginning; and the Blood is ſizy in both, and that occaſions that Stagnation which oppreſſes the Brain and Nerves, and hinders the Efflux of Animal Spirits into the Muſcles; whilſt the Spirits are ſtrong, the Pulſe is great, and ſtrong and quick, as in Fevers, and 'tis hard as in other Inflammations; but if the Spirits be much oppreſs'd, the Pulſe is unequal, intermitting, ſlow, rare; and in a vehement Apoplexy, the Pulſe is languid, ſmall, and quick and hard.

In the Palſy the Pulſe is ſmall, ſlow, rare, ſoft, languid; when the Spirits are much oppreſs'd, the Pulſe inordinately intermits

termits through the weakneſs of Spirits; but in the beginning of the Palſy, the Pulſe is feverilh and frequent, and the Blood is very ſizy, as in all Apoplexies; and that Sizineſs moves thro' the Blood-Veſſels to the *Medulla oblongata*, as the Apoplexy clears up, and recovers, and after ſufficient Bleeding and Gliſters for the cure of that Inflammation, we ought to preſcribe the Cortex in Apoplexies and Palſies, for the Intermitting-Fever joyn'd with them. I have found Purging very miſchievous to Paralitics in the beginning in great weakneſs, the Pulſe is frequent, and inordinately intermits. At 100 Pulſes in a Minute we uſually find all Fevers, whether Hectic or Putrid, and all the Defluxions are from 95 to 100, and Pains of the Head and Joints if great.

In hot or cold Diſeaſes of the Lungs, and in all Defluxions on them the Pulſe is unequal, becauſe the Blood ſtops on the Lungs, and the Veſſels are compreſs'd by the Defluxion eſpecially, if the Humour be thick and viſcid.

The Aſthma is a Defluxion, and the Pulſe in thin hot Tempers beats about 95, 'tis frequent, ſmall, weak, intermitting; the frequency and quickneſs demonſtrates the Fever which accompanies the Aſthma,

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as well as other Defluxions; the oppreſſion on the circulatory Veſſels makes the Pulſe unequal and inordinate, and ſomewhat deficient; a great Orthopnea makes the Pulſe frequent, but a violent ſlow, and deficient; a fatal Fit makes it frequent and languid: I obſerv'd that in a great Cold that is joyn'd with the Aſthma, the Pulſe runs to a 100, and does not ſoon return to the natural Number under three or four Days; but as it goes off, it ſhrinks every Day a little; firſt towards 90, then 80; and ſo to the natural, if the Spirits be weak, the Pulſe is not quick, but frequent.

In extream weakneſs the Blood ſtops in the Cava, and in the Face when it looks Livid; a full Inſpiration is wanting in the aſthmatic Fit, which is neceſſary to promote the Reflux of Blood.

In all diairy Fevers, which depend on Paſſions, Evacuations ſtop'd, hot Air, hot Baths, *&c.* the Pulſe is great, quick, and equal; and the Pulſe runs from 95 to a 100 in hot Tempers; but in the cold Pituitous the Pulſe runs 10 or 20 lower; and yet it muſt be accounted a Diairy, becauſe of the Defluxions; and the natural Pulſe is under 70 in all cold Conſtitutions and Diſeaſes; and the diairy Fever

has the Pulſe alter'd by the Symptoms attending it; but if 15 or 20 Beats increaſe above the natural Number, 'tis a Fever.

In continu'd putrid Fevers, the Pulſe is greater, and quicker, and more frequent, and full, and unequal, as the Heat is; but in diairy Fevers the Pulſe is equal, becauſe the Heat continues the ſame from the beginning to the ending.

The continent Fever without Putrifaction has very great, equal and vehement Pulſes, and is an Ephemera in its Nature, attending defluxious Pains, *&c.* when they continue long.

A burning bilioſe putrid Fever, or *Cauſus*; has the greateſt and quickeſt, and moſt frequent Pulſe, and moſt vehement.

The Tertian has great, quick, frequent and vehement Pulſes, and equal; in theſe there are bilioſe Vomits, and the Liver is affected.

In Quotidians the Pulſe is leſſer, and rarer, and ſlower, and unequal; the Digeſtion is ill in their Stomachs, and they vomit Phlegm, and their Bloods are ſlimy and cool.

In Quartans the Pulſe is more ſlow, and rare in the beginning, and ſome inequality is obſerv'd by *Galen*; but in the increaſe

creaſe of the Fit, the Pulſe is quick and frequent.

In Hectics the Pulſe feels hot, and 'tis weak, quick, and frequent, ſcarce ever in hot Tempers under a 100; but in the Fits I have obſerv'd 120.

Ephemeras oft end in Hectics, or Intermittents, becauſe the Pulſe is a-like frequent in all of them, and beats about 100.

In a malignant Fever the Pulſe is unequal, ſmall, and languid, for want of Spirits, and very frequent; the Pulſe is various, as to ſtrength, weakneſs, greatneſs, and ſmalneſs, rarity, and frequency; and the anxiety, trembling, palpitation, and intermiſſion of Pulſe, are ſometimes from Blood too Viſcid for Motion, or from weak or oppreſs'd Spirits.

When the feveriſh Matter is transferr'd to the Head, the Pulſe is ſmall, and frequent and weak.

In the Plague the Pulſe is ſuddenly weak and feveriſh, but the Heat is little in peſtilential Fevers, as well as the Spirits weak; the Pulſe is oppreſs'd by coagulated Blood, the Spirits are ſuffocated by peſtilential Air. *Galen* obſerves, That there is no Fits, nor Increaſe, nor Vigour in ſuch Fevers, which makes them to ima-

gine they have no Fever; but 'tis certain, the Fever may be obſerv'd by the acrid Heat; and the Pulſe is but a little chang'd from the natural δύσφυξία, ſo that it is not greater, and ſometimes not more frequent; but it always has a greater Celerity, and is weak; and at firſt it was Feveriſh, but not always alike; we diſcern the Putrifaction in Diſeaſes by the fætor of the Sweat, Urine, Stools, and Stinking-Breath.

The Pulſe in the *Hydrophobia* is ſmall, unequal, and Convulſive.

Note, That intermitting Fevers have a quick Pulſe during the intermiſſion or remiſſion of the Fever; in Agues, during the intermiſſion, the Pulſe is more natural; but in Quartans 'tis more rare and ſlow, than in other Fevers; during the intermiſſion, as well as in the Fits; and in this Fever the Spleen is affected.

In the beginning of Fever-Fits without Sickneſs and Coldneſs, the Pulſe is great and quick; but as it increaſes, 'tis very frequent; but if the Fever-Fits begins with Nauſeouſneſs, Vomiting, Rigour, Horrour, Heavineſs, the Pulſe is unequal, ſmall, and languid; becauſe the Stomach is affected, and the Cold alſo makes them ſlow.

Galen

Galen affirms, That the true Sign of the coming of the Fits is the Celerity of the Contraction, since this is not discernible of it self; we must consider the Celerity of the dilatation of the Pulse, as the more certain Sign; and where the Distention is quick, the Contraction must be so too.

We know Inflammations from putrid Fevers, because in them the Pulse is hard; in Hectics the Pulse is never great and vehement; the diairy Fevers have great and vehement Pulses, but the putrid is known by the Celerity of the Pulse, which is the chief sign of Fevers.

If the Fits come with Coldness, the Pulse is small, slow, and rare; but as the Fit increases, the Pulse becomes great, quick and frequent.

In the *Elephantiasis* the Pulse is weak, slow, small, but frequent from the weakness of Spirits; but 'tis not so till the Disease has continu'd long; in all putrid Humours, the Spirits are weak, and the Breath is fætid, as well as the Urine and Stools; in great weakness the Pulse is small, languid, rare.

In the Scurvy the Pulse is unequal, sometimes weak, small, formicant; and at other times great and hard, as in the

hot Scurvy, in which the Blood is sizy; and there is a tendency to an Inflammation; the Pulse oft intermits, because the Blood is thick, and the Spirits move irregularly. The Itching and Formication in the Skin depends on the saltness or volatile Acrimony of Blood, or rather its *Serum* is evaporated, and very Salso acid.

In the Worms the Pulse is unequal, thro' the Irritation by them; 'tis sometimes Feverish, and beats with more frequency; the Breath smells, and in great Worms the Pulse is Feverish.

The Pulse in Poisons from Opiates (such as Mandrake, *Altercus*, *Opium*) is made more full and rare, like the Pulse of the Lethargick, by 20 drops of *liquid Laudanum*, in a Fever the Pulse was reduc'd from 100 to 80 beats in a Minute, but next Day it rose again.

3. The Obstruction in the Artery alters the Pulse, so in a Polypus the Pulse intermits, and vibrates, and is obscure; the motion of the Body is slow and torpid, the Veins of the Neck are swell'd as big as two Fingers, the concretion of sizy Blood produces the Polypus.

Dr. *Harvey* observes, That the swell'd *Jugulars alte & vehementer Pulsabant.*

Har-

Harvey obſerves, That in an Aneuriſm in the Neck, *Pulſus ejuſdem brachi exilis admodum.*

In the Varices *Lower* obſerves, That the Pulſe is languid and deficient.

The old Obſtructions produce unequal Pulſes, being greater, and ſmaller, ſtrong, and weak; and by theſe we know Obſtructions, and Obſtructions produce alſo intermitting Pulſes: But at firſt Obſtructions make the Pulſe vehement, great, throbbing and frequent; after ſome time 'tis leſs, when the Obſtruction inflames the Part, the Pulſe is more frequent and hard.

A Schirrus makes the Pulſe hard by hindring the paſſage of the Blood into the Veins.

All Obſtructions in the hot Cacochymias, and in hot Conſtitutions, muſt be joined with a feveriſh Pulſe; 'tis like a River ſtop'd in ſome of its Rivulets, the Water will run faſter, and in greater quantity in the other Branches.

In the *Anaſarca*, the Pulſe is undoſe and ſoft; 'tis ſoft, becauſe the Artery is empty, and the *Serum* is evacuated out of it into the ſolid Parts; 'tis undoſe, becauſe the watry Blood moves ſlowly, being little rarify'd, and the Spirits much oppreſs'd.

The Pulſe in the *Aſcites* is ſmall, becauſe the Spirits are weak; and the Veſſels have loſt the *Serum* of the Blood by its Evacuation into the Cavity of the Abdomen; the Pulſe is alſo quick, becauſe the rarifaction of the Blood makes a feveriſh Crebrity, and there is a ſort of hectic in all Dropſies, for want of *Serum* in the Blood; and this alſo makes the Pulſe ſmall, quick, and frequent.

The Pulſe is ſubtenſe in the Dropſy, becauſe the Artery is oppreſs'd by the quantity of Water, and the *Viſcera* obſtructed, pain'd, inflam'd.

In the Timpany, the *Arteria aorta* is not ſo much oppreſs'd, the Pulſe is ſubtenſe, becauſe a little oppreſs'd; the Pulſe is alſo quick and frequent from the Evacuation of *Serum*, the Pulſe is not weak, but very quick.

In the Timpany the *Serum* is extravaſated betwixt the Muſcles and Peritoneum.

In an *Eryſipelas* the Pulſe is quick and frequent, as in a Fever; and in a bilioſe Cacochymia 'tis great and vehement.

The Pulſe in a Cancer is hard as in a Schirrus, and frequent as in an Atrabilarian Conſtitution, or ſmall Fever and Pains.

In

In a Gangrene an inflammatory Pulſe preceeds, afterwards the Pulſe is languid, ſmall, and frequent, and a Sincope ſucceeds.

The Hemorrhoids may be obſerv'd by the quick and frequent Pulſe when they are inflam'd; and by a ſmall weak Pulſe, if the Evacuations be exceſſive by Bleeding.

The Pulſe is ſmall and rare upon a Suffocation, or ſtop of Circulation.

The Pulſe is frequent and inequal upon Dying.

The Inflammations and Pains in the Glands may be known by a quick and feveriſh Pulſe; but in the old Obſtructions, we can know no more than the Cacochymia which obſtructs them, ſo it is in the Scrophula and Herpeſcet.

The inward Intemperies of the Liver and Spleen may be known by the Pulſe of the ſeveral Cacochymias, and their great Obſtructions by the hardneſs.

The motion of Humours is ſtop'd in their ſecretory Veſſels, and the ſeveral Pulſes are obſerv'd according to the Cacochymias.

The Jaundice without a Fever has a leſs, more frequent and hard Pulſe, not weak, nor very quick, unleſs there be a

ſmall

ſmall Fever; the Obſtruction makes a hard Pulſe, the ſtagnating Bile tinctures the Blood with a great Acrimony, which irritates the Heart; the Pulſe is ſmall, becauſe the Spirits are oppreſs'd, and the Blood by a large quantity of Bile.

In the Obſtruction of the Spleen the Pulſe will be as in the melancholic Humour, and as in a Schirrus hard; if hot Winds obſtructs the Pulſe is as in the Atrabilarians, if the crude melancholic Blood obſtructs as in the cold melancholic Pulſe.

In the Green-Sickneſs the Menſes are ſuppreſs'd, which makes the Pulſe quick and frequent; and the Pulſe appears beating violently in the Neck.

Moſt ſuppreſſions of Humours naturally evacuated, ferment the Blood; and the ſtop of the Menſes produce the *febris alba*.

Obſtructions produce a diairy Fever if ſmall, but if great a continent Fever; and there are ſigns of Putrifaction in the Pulſe; the greater the Obſtructions are, the greater is the Fever; after Bleeding the old Writers preſcrib'd Detergents as Oxymels.

The binding of the Body heats it, and raiſes the Pulſe, and cauſes Head-achs; but

but a natural Stool ſinks the Pulſe, and cools all the Body.

In the ſuppreſſion of Urine the Pulſe is oppreſs'd and frequent.

Perſpiration ſtop'd makes the Pulſe feveriſh, quick, and great; ſtiptic Baths as the Steel Baths ſtop Perſpiration, and ſo do emplaſtic and ſtiptick Oils; and any thing which over dries the Skin, cauſes its Contraction, as hot Oils, Inſolation, and much Wine, and little Motion, rouling in the Duſt, vehement and dry Frictions.

The uſe of too much Niter or Salt in Friction, or too much Exerciſe.

If the hot acrid *fumoſe Perſpirabile* be retain'd, it ferments the Humours too much; and glutinous, thick Humours are eaſily ſtop'd in their Perſpiration; the Obſtruction of the Pores breeds an Ephemera, or continent Fever, or an Intermittent.

I have tranſcrib'd theſe Obſervations about Perſpiration from *Galen*; and the Cauſes of Perſpiration ſtop'd muſt be avoided, but if it happen he uſually reſtored it by tepid *Baths*, much Oils that is diſcuſſing, and by gentle ſoft Friction, moderate Exerciſe, warm, hot Diet.

In hot Countries, and hot Seaſons, the greateſt Evacuation is by the Pores, and

we

we muſt avoid all Things which ſtop Perſpiration, all Things which contract the Skin, as Horrors in Fevers, or Bathing, and all outward Stiptics. So *Galen* ſays, the *Albulæ* caus'd a Fever in a hot and dry Body; as Cares, Sadneſs, do the ſame.

The Pulſe-Fits for Perſpiration is the undoſe, which is a ſtrong rare Pulſe; and thoſe Things which move the Blood to a quick, ſtop Perſpiration; as Fevers, Anger, violent Exerciſe, hard Friction, great heat of the Sun.

4. The Pulſe is alter'd by the Preternatural Evacuations of Humours.

In *Hemorrhagies* by the Noſe, Womb, Diſentery, Piles, if they be profuſe, the Pulſe is languid, ſlow, vermiculoſe if without a Fever; otherways 'tis ſmall, quick and frequent, as in Fevers.

In the Flux of the *Menſtrua* the Pulſe is weak and frequent; and ſo it is in the *Fluor albus*.

In *Diarrheas*, *Diſentery*, *Choleras*, which are generally joyn'd with Fevers, the Pulſe is weak, ſmall, quick, and frequent.

In a *Diabetes*, the Pulſe is weak, quick, and hectical, and very frequent.

Vomit-

Vomiting and Nauſeouſneſs have a ſmall, languid Pulſe, a little quicker, and more frequent.

The Pulſe in a Salivation is ſmall and frequent.

In a *Diarrhea*, with Pains and Gripes from a Surfeit, the Pulſe is Feveriſh.

The Pulſe in taking of *Hellebor* is rare, languid, and ſlow, whilſt they Vomit; 'tis inequal and inordinate alſo, but more ordinate as the Vomiting ceaſes, and leſs inequal than before: And when the Operation is over, and the Pulſe returns to its natural State, 'tis equal, and greater than before, and more vehement; they who are convuls'd by the *Hellebor*, and have the Hickup and faint, have a ſmall, languid, inordinate, quick and more frequent Pulſe; they who are ſuffocated by this, have a ſmall, languid, inordinate, unequal Pulſe; but not quick and frequent, but ſlow and undoſe, with a ſmall Tenſion of the Artery.

Note, That ſtrong Vomits raiſe the Pulſe after the Evacuation is over, as is mention'd in *Hellebor*.

Lenient Purges ſink the Pulſe, but ſtrong Purges raiſe it, as we find it makes us Feveriſh.

The

The vermicular Pulſe is without a Fever, and it accompanies all great Evacuations, as *Hemorrhagies*, *Choleras*, *Diarrheas*, *Menſtrual* and white *Flux*; but at laſt this ends in the formicant, which is extreamly ſmall, languid, frequent; this Pulſe belongs to them who Die of theſe Fluxes, therefore the Pulſe alters in all Fluxes; whilſt the Fever accompanies Fluxes, the Pulſe is Feveriſh; when the Spirits are low, the Pulſe is vermicular; when extream weak, the Pulſe is formicant.

5. The Diſeaſes in the Animal Spirits alter the Pulſe.

In Faintings or Sincopes, the Pulſe is ſmall and weak, and very frequent, which is call'd, *Pulſus Coacervatus*, in dying People: At laſt, in the Sincope the Pulſe is rare, and then ſtops; the Pulſe in the Sincope is not quick, tho' frequent; and not ſo frequent as in burning Fevers.

The Pulſe in Giddineſs appears ſmall, unequal, intermitting, and the Stomach is Sick: In Giddineſs with Fevers, the Pulſe is Feveriſh, the irregular motion of the Spirits in the Brain hinders the Flux of Animal Spirits into the circulatory Organs, which produce a ſmall and intermitting Pulſe.

In

In the Palsy, in some the Pulse is languid, slow and rare, in others frequent and intermitting.

The motion of the Spirits is too much accelerated in Convulsions, and deprav'd by a windy *Serum*; and the Artery is describ'd as vibrated, or shaken like a Cord; and when 'tis shaken, in a Convulsion the annular Fibres may be constringed; so that the Artery may appear like a Cord when stretch'd at both ends; 'tis mov'd unequally, lift up, and retracted; and sometimes the Pulse appears vehement and great, but 'tis Convulsive in its Contraction and Vibration; but the *Strepitus* of the Pulse which is said to be felt, is unintelligible. In Convulsions the Contractions of the Muscles stops the Pulse.

Galen makes the Pulse of the Epileptic and Apoplectic alike; in a small Fit the Pulse is not much alter'd, in Vehemence, Magnitude, Celerity, Crebrity, and Hardness, if the Oppression be great thro' the stoppage of the Circulation in the Brain, the Pulse becomes unequal, tense, lesser, more languid, rare, slow; in extream danger through Compression, the Pulse is languid, small, frequent; the Convulsions in the Epilepsy will produce some convul-

sive

ſive Motions in the Artery, in the beginning of the Fit.

In Convulſions with a Fever I obſerv'd the Pulſe quick and frequent, and intermitting in the Fits.

In *Hyſterics*, the Pulſe is ſmall, weak, and rare; the Artery is convuls'd, and ſtretch'd out; by the convulſive motion in the Fits, in a dangerous Caſe the Pulſe becomes frequent, inordinate and deficient; the weak Spirits uſe their utmoſt Effort to maintain the Circulation by a frequent Pulſation.

Sneeſing, Oſcitation, Pandiculation are convulſive Motions, and the Pulſe is accelerated by them; we may obſerve the Pulſe to beat faſter after Sneeſing, but that frequency will immediately ceaſe.

The Pulſe in a Palpitation is unequal, inordinate, ſometimes ſmall and ſlow, at other times frequent; the Pulſe is continually irritated, if a Tumour be in the Heart, which cauſes it.

A Palpitation from a Fever is known by a great, quick, and frequent Pulſe.

If the Palpitation be caus'd by expence of Spirits in Faſting, or Evacuations, or through Paſſions of Anger, Joy, Shame, Fear, the Pulſe is quick and frequent; in Fear ſmall, in Anger greater.

Water

Water in the *Pericardium* is thought to make a ſoft and ſmall Pulſe, and they have an Imagination that their Hearts are ſuffocated in Water.

If a Fume or Wind occaſions a Palpitation, it goes and comes ſuddenly; but if any thing Corrupted, Venomous, Malignant, produces the Palpitation, there is a greater variety in the greatneſs and ſmalneſs of the Pulſe.

In a *Hickup* from Emptineſs or Fevers, there is the Pulſe of thoſe Cauſes which produce it.

The Pulſe in the *Catalepſu* is like that in the Lethargick in greatneſs, ſlowneſs, rarity, but the Pulſe is not weak or ſoft; in the Lethargick the Muſcles are relax'd; in the *Catalepſu* they are contracted, the Pulſe is equal in the Catoche, unequal in the Lethargick; it ſeems to be a Convulſion with Sleep, and a mix'd Diſeaſe of both; the Artery feels hotter in this Diſeaſe, becauſe the Blood is ſtop'd in it by the Contraction of the Muſcles, which alſo makes the Pulſe hard and ſmall, and not weak. *Sennertus* obſerves, That the Pulſe in the Catoche remain'd entire, without any Alteration great enough, and like the Lethargick.

In *Deliriums* the Pulse is disturb'd, contracted, or else appears to tremble and vibrate like a Cord. In Inflammations of the Head there is a Fever and *Delirium*, if the *Limpha nervosa* be wanting, they want Sleep; if too much, they have a Sleep, which is comatose. In natural Sleep the *Succus nutritious* oppresses the Head, in the Preternatural the sizy or watry *Serum*.

The Diseases of the Stomach alter the Pulse, if the Stomach be oppres'd with quantity of Meat, the Pulse is languid, small, slow and rare, the Spirits are oppres'd, and the Circulation thro' the *Cava* is retarded, and becomes slower, and the Blood is cool'd and clogg'd by much Chile; cool Meats produce the same Pulses.

The Inflammations and Pains of the Stomach have the Pulses of those Diseases, and so have the Tumors of it; the Pulse is hard, small and frequent.

Faintings, Hickup, Nauseousness, Vomiting, have the same Pulses as those Diseases have, a small, languid, a little quicker and frequent Pulse; the Contraction of the Stomach in those Diseases accelerates the motion of the Blood in the *Vena Cava*, and that makes the Pulse more frequent; and the faintness of the Spirits

will

will do the ſame. The Oppreſſion of the Stomach by ill Humours makes the ſame Pulſe, as the Oppreſſion by an abundance of Meat

If the Humours be Phlegmatic, and not Hot, as in the *Baulimia*, the Pulſe is languid, ſmall, ſlow, rare.

After the Crebrity in long Diſeaſes ſucceeds a vermicular Pulſe in the Diſeaſes of the Stomach; and thoſe Diſeaſes which have a rare Pulſe, *Galen* ſays, have an odd appearance, as if the Artery were bor'd through, and divided; this I mention to try the feeling of the *Neoterics*, whether his Obſervation be Matter of Fact or only Fancy.

The Pulſe is very ſmall, if ceruginoſe Choler only infects the Mouth of the Stomach.

If Aſſes Milk corrupts in the Stomach, the Pulſe is ſmall and unequal, as in all other Oppreſſions of it; but if it corrupts not, the Pulſe becomes great and ſtronger, as it is after our ordinary Diet.

In cold and weak Digeſtions the Pulſe is ſmall and weak; therefore this is the Pulſe in ſour and windy Stomachs, who complain of them, and a Weight at their Stomachs.

In *Cachexies*, where the Chile is not well digeſted, the Pulſes are languid, weak and frequent; becauſe the Spirits are weak thro' Crudity, and the frequency depends on weak Spirits, which cannot make a great Pulſe to paſs great quantity of Blood at one Stroke; and the Blood being but a little rarify'd, it Circulates with greater difficulty.

In the *Pica*, the Pulſe is the ſame as in Nauſeouſneſs, the Spirits are anxious and languid, and there is ſometimes a *Morſus* at the Stomach, and much Spitting; from all theſe Cauſes, the Pulſe is ſmall, languid, frequent.

Heat is the inſtrument of Digeſtion, and that is produc'd by a Fermentation in the Stomach; and the Pulſe is greater or leſſer, quicker, and more frequent, as the Heat of the Digeſtion is; for in choleric Tempers, where the Ferment is very acrid, the Pulſe after Eating runs faſter than in the phlegmatick Tempers, where the Ferment of the Stomach is more crude, ſour, watry and ſlimy.

A nidorous *Ructus* has a hot Cauſe, a ſour Acid, a want of Heat; therefore theſe may be known by the hot and cold Pulſes; a nidorous Quality in our Stomachs produces an *Ephemera*, but an *Acer-*

bity, a coldneſs of Humours, and Pulſes, weak, and ſlow, and rare.

A ſmall, languid, frequent Pulſe, accompanies a languid Stomach, Pain, Nauſeouſneſs.

As an Oppreſſion gives a rare, ſlow, languid, ſmall Pulſe, ſo an Irritation gives a frequent, and more quick Pulſe. When weakneſs and oppreſſion both affect the Stomach, the Pulſe is ſmall, languid, frequent, unequal.

There are two Species of crude Humours in the Stomach and Blood; the Phlegmatic which is viſcid, and the watry, in the Phlegmatic the Pulſe is a little Tenſe, in the Watry more ſoft.

CHAP. VII.

Concerning the Prognostications which may be made by the Pulse.

THE Prognostics in general respect the good and bad Event of the Disease, the time of the Event, and the Manner.

The Death or Health is to be observ'd by comparing the strength of the vital Faculty (which consists in a due Temper of the Fluids, and the strength of the Animal Spirits) with the Disease, its Kind, Greatness, Part affected, Motion, Manner, Symptoms in Number and Strength; and if the Faculty be stronger than the Disease, then Health will ensue; if weaker, Death; at that time the Disease Conquers.

An Imbecility may be in the solid Parts, as well as the Fluids; and the strength depends on both.

The vital Spirits are the Animal, as they are commonly call'd; I call them vital, because they move the Heart and

Re-

Reſpiration; and they may be either oppreſs'd, or diſſipated; and we judge of theſe as well as the Diſorders of the Blood by the Pulſe.

By the Numbers of the Pulſe we know the greatneſs of the Diſeaſe, as the Numbers are diſtant from the Natural; and the Pulſe it ſelf is alter'd by the Diſeaſe in Celerity, Greatneſs, Frequency, Strength, *&c.* and the Diſeaſe is Dangerous as it injures the Circulation, which is known by the Pulſe.

By a ſtrong, great, quick Pulſe, we obſerve the ſtrength of the Spirits, by a weak, ſlow and rare Pulſe, we diſcern the debility of Spirits, and want of a natural Rarifaction in the Blood; the vehement, great, quick, the undoſe, vibrating, and *Dicroti*, are ſigns of ſtrength; but the ſmall, languid, intermitting, ſlow Pulſes; the *myuri*, *formicantes*, and *vermiculantes* are ſigns of a weakneſs.

If the Pulſe be ſtrong, 'tis a ſign of a good and ſpeedy *Criſis* in a Fever; if there be no ſigns of Digeſtion, and the Pulſe be ſtrong, 'tis a ſign of a long, but ſafe Fever.

If the Heat be but little encreas'd, it makes the Pulſe greater; but if in a higher degree, 'tis alſo quick; but if moſt ra-

rify'd, 'tis frequent; therefore by a frequent Pulse, if it be strong, we may observe the degrees of Rarifaction in our Humours, and the swiftness of the Circulation.

A frequent Pulse join'd with weakness, it is a sign of the utmost Efforts of Nature in dying Persons, as in the formicant Pulse; or else there is a Fever join'd with weakness of Spirits, as in the Consumptive.

A rare Pulse depends on weak Spirits, or cool Blood; rare Pulses are always dangerous, and so are small Pulses; if they be not by consent from other Parts, as the Womb, Spleen, Stomach; so in a *Boulimia* the Pulse is rare, slow, small, languid, and not dangerous; and the same is in hysteric Fits, the beginning of Fevers, and Melancholics; a vermicular Pulse follows the profuse Evacuations of Humours, and shews the dissolution of Spirits.

A formicant Pulse attends the dissolution of Spirits in malignant Fevers, and 'tis the extream, quick, small, frequent, as the vermicular is the extream, slow Pulse, and both are commonly fatal.

In most Inflammations the Pulse is hard, and ferrine, except in the Peripneumonia and Lethargy.

A hard

A hard Pulſe is a ſign of the Inflammations of ſome nervous Membrane with much Pain, and 'tis a ſign of ſizy Blood.

A ſoft Pulſe is from a cool Blood, or empty Veſſels.

An intermitting Pulſe is dangerous in Fevers, and a ſign of Death.

Intermitting Pulſes are moſt dangerous in young Men, not in the old, nor to thoſe to whom 'tis natural; the longer the Intermiſſion laſts, 'tis worſe, and the more frequent it is; and if it be join'd with Languor, Crebrity, and Smalneſs, or elſe with Rarity, Languor, Slowneſs.

All unequal Pulſes with ſtrength and quickneſs, are more ſafe than thoſe with Languor and Slowneſs.

An inequality in the Pulſe is a ſign of Irritation, Obſtruction, Fulneſs, or Compreſſion of the circulatory Organs, or animal Spirits.

An unequal Pulſe which has any Order is ſeldom found, therefore inequality is generally joyn'd with Perturbation of Order; a ſmall Cauſe produces inequal and ordinate Pulſes, but a greater, inequal inordinate Pulſes.

It requires great ſtrength, and 'tis a ſign of it, to keep the Pulſe equal; 'tis unequal

equal in old Men, by debility of Spirits; and when they are oppreſs'd by the malignity of a Diſeaſe, or by violent Paſſions, great Evacuations, want of Nouriſhment, and great Pains, and always in Diſeaſes of the Lungs, and Defluxions, Aſthmas, Dropſies of the Breaſt.

An undoſe Pulſe, if ſtrong and high, is a ſign of Sweat; if ſmaller, 'tis a ſign of Weakneſs; 'tis common in *Anaſarcas*, *Quotidians*, Dropſies, and pituitous Diſeaſes, or 'tis a ſign of the oppreſſion of the Brain in a Lethargy and Coma; generally an undoſe Pulſe is a degree of ſlow Pulſes from weak Spirits.

An undoſe Pulſe with greatneſs is always a ſign of Excretions from ſome Glands; an undoſe Pulſe with hardneſs is from fulneſs; an undoſe Pulſe with a Vibration is a ſign of the *Menſtrua*, or ſome *Hemorrhagies* by the Noſe, Belly, *Hemorrhoids*, &c.

The weak, undoſe, ends in the vermicular, after great Evacuations.

A rare Pulſe is ſometimes join'd with a ſtrong Pulſe in thoſe who live long, whoſe Bloods and Spirits are not too much rarify'd.

All Pulſes which recede from their natural Mediocrity are ill, the languid, ſlow, rare,

rare, are worſt, as well as the moſt ſoft and quick.

If a hot Temper fall into a hot Diſeaſe, the Pulſe receeds but little from the natural, and a leſs quantity of cold Medicines will reduce the Pulſe to its natural Number.

All Diſeaſes are dangerous which affect the Brain, Liver, Lungs, Reins, Stomach, Heart, Veins, Arteries, becauſe theſe Parts do promote the Circulation, or hinder it.

A very ſmall, hard and frequent Pulſe is fatal in Pleuriſies.

Thoſe Pulſes are beſt which are like thoſe of the Healthful, but it happens in malignant and peſtilential Fevers, that as the Urine, ſo the Pulſe is like that of the Healthful; but I doubt whether this Obſervation be true, for thus *Galen* deſcribes the Pulſe in the Plague.

In the beginning of the Plague the Pulſe is little alter'd, but is like that in *Ephemera*'s; but after the third Day the Pulſe is evidently quicker and more languid, as the Heat increaſes; and the Breaſt feels hot, and the Breath ſtinks.

A full, or an empty, or ſoft Pulſe, ſhews the great Rarifaction or Condenſation of Humours, or their Plethora or Defect,

fect, the convulsive Pulse is fatal in Fevers.

A trembling Pulse is a sign of a Palpitation or great Weakness.

The *Dicrotus* shews the strength of Spirits, if vibrated; it also shews the oppression on the Organs of Circulation; and *Galen* makes it a sign of the Intemperies of the Heart.

A vibrating Pulse is a sign of strength, unless it ends in some inequal one.

Where the greatness of the Pulse can suffice, there is no need of Velocity; but as that remits, the Velocity is necessary; and if that does not suffice, Density is necessary.

A constant, strong Pulse, shews the Concoction of Humours, if it be also quick, and moderately frequent, and a constant, small Pulse; if it be also slow and rare, shews a weak Digestion.

A change to a great and high Pulse is a sign of a *Crisis*; a high, great Pulse, is a sign of an *Hemorrhage*; an undose Pulse foretels a *Crisis* by Sweat; a hard Pulse by Vomiting and Loosness.

We know the Concoction of Humours in a Fever, when the Pulse is great from small, strong from languid, equal from unequal, less, quick, and more rare.

The

The Crudity of Humours is known by the abſceſs and length of the Diſeaſe; and the Pulſe continues ſmall, languid, quick, unequal.

There is a feveriſh Pulſe attending all inward Abſceſſes, ſuch as is in ſlow Fevers.

The *Syſtole* and *Diaſtole* more remiſs in Celerity, are ſigns of a good *Criſis*, as well as of the Digeſtion of Humours, becauſe a ſlower Pulſe is fitteſt for Secretions; and a quick Pulſe makes ill Secretions in Fevers; the great Pulſe, and the ſlow, are always ſigns of good Secretions; the ſmall and quick are the moſt unfit, and are ſigns of ill Secretions.

The alterations of the Pulſe which depends on the *Non-Naturals*, as Diet, Exerciſe, Paſſions, do not laſt long; but a natural Pulſe is moſt permanent.

When the Pulſe changes from great, quick and frequent, to the contrary, it firſt becomes rare, then ſlow, afterwards ſmall; and at laſt the ſlowneſs turns to frequency.

In Diſeaſes of the Brain and Lungs the Pulſe is ſoft, and tho' they be inflam'd not ſo hard as in other Membranes Parts inflam'd.

The Inflammations of the Muſcles of the Belly, or other Muſcles does not make a hard Pulſe, unleſs the tendinous Parts are inflam'd; the Dropſie it ſelf does not make hard Pulſes, unleſs the Liver be inflam'd.

The Arteries near a Tumour are moſt hard, but if they be very remote, the Pulſe is not alter'd; the Skins of the Teſticles being inflam'd, make a hard Pulſe; but if their Body be inflam'd, they are leſs hard.

The Pulſe is made ſoft by a thin Blood, and in Dropſies, and Ordematous, Tumors, and by nutritive Diet, and Baths, and an idle voluptuous Life, and Sleep, and by Pituitous Diſeaſes; all which relax the Habit of the Body, and make the reſiſtance to the Pulſe much leſs.

A hot Intemperies, a hot Cacochymia, Defluxions, Pains, Inflammations, and hot Tumors, make a feveriſh Pulſe alike in all Parts; but in the cold Intemperies, cold Tumors, and moiſt Diſeaſes, the Pulſe is ſoft, ſlow, and rare; and this is chiefly produc'd by a pituitous and cold flatulent Humour.

A hard Pulſe is from much Heat, when the Humours are viſcid, and ſo they be in ſchirroſe Tumors; and if it be from a me-

a melancholic Humour the Pulſe is more hard.

A great and high Pulſe is a ſign of a *Plethora*.

Galen tells us, That by the greatneſs of the Pulſe in Health, we may know the Temperament of any Man; in thin Bodies 'tis greater, and in hot Conſtitutions.

Galen, in his Book of *Preſages* by the Pulſe, tells us, That by the Celerity of the Pulſe we may know a hot Conſtitution; and by a ſlow Pulſe, a cold Temperament; and they who have a quick Pulſe generally have alſo a greater, both in Health and Diſeaſes; and if the Heat be increas'd, the Pulſe in hot Temperaments is very frequent; and very frequent Pulſes ſhew more Heat than the quick or great.

The Pulſe is moſt frequent and vehement in burning Fevers, where the Spirits are very much rarify'd; and the Blood is very acrid from Choler, which irritates the Heart to a frequent Contraction.

The Spirits, Blood, or Reſpiration being ſtop'd, a Suffocation is produc'd.

Fevers, Conſumptions, Evacuations, Pains, diſſolve the Spirits, and kill.

If the great and vehement Pulſes are more than the contrary, languid and ſmall; the oppreſſion in the Pulſe is not dangerous.

Whatſoever Diſeaſe ſtops the Flux of Spirits to the Heart, or alters the Blood in its Quantity or Quality, or hinders the agitation of the circulatory Organs, is dangerous, becauſe our Life conſiſts in the Circulation, this happens in Dyſpnæas Pains, Diſeaſes of the Stomach, Liver, Head.

The Intermiſſion of Pulſes for one Stroke is moſt moderate; if for two Beats 'tis long, if for four or five 'tis dangerous.

Both very ſlow, and very quick Pulſes are dangerous; and both ſubject to ſudden Deaths, and ſo are very languid; therefore we muſt eſteem all Extremities very dangerous, as the very rare, very weak, and very ſmall Pulſes.

The Crebrity is very great in burning Fevers, but not ſo pernicious; the moſt hard Pulſe is alſo dangerous, as is the moſt ſoft, but the moſt vehement is not ſo, this is a certain Rule; the more the Pulſe receeds from the Natural, the more is the Danger.

A vehemency join'd with an undoſe Pulſe is a ſign of Sweat, becauſe all Excretions

cretions require a ſlower motion of Humours, which helps the Secretion; an undoſe Pulſe is a ſign that there is no Schirrus, nor Inflammation, nor Convulſion, nor ſtoppage of Perſpiration; becauſe an undoſe Pulſe is a Species of ſlow Pulſes, and 'tis the excretory Pulſe when vehement and high.

A Tendon in the Hands or Feet being inflam'd produces a hard Pulſe, by giving a Convulſion to the Membranes, which ſtops the Pulſe; the Inflammation of the Muſcles does not make the Pulſe ſo hard; but 'tis hard, becauſe the Part is naturally hard; and is more diſtended by a Tumour, which makes the Pulſe great, quick, frequent, becauſe of the inflammatory Fever.

All Schirrus of the Liver, and Spleen make a hard Pulſe, and in Dropſies Aſcites the Liver is hard, which makes the Pulſe ſo; and 'tis alſo mix'd by having ſomething of Relaxation in the ends of the Artery, which makes the Pulſe undoſe, and ſomewhat ſoft.

The Dropſy always follow the Schirrus of the Liver, and not always that of the Spleen; becauſe the Tumour of the former breaks the Limphatics which abound near the Liver.

A Dropsy without an Inflammation of the *Viscera* does not make the Pulse hard.

The Evacuation of the *Hemorrhoids* and *Uterus* produce a Dropsy, by depressing of the Pulse to lower Numbers; and by abating the force of the Circulation.

The suppression of the *Hemorrhoids* and *Menstrua* fill the Vessels with serous Humours, which by a feverish Pulse are extravasated, and cause Dropsies.

CHAP.

CHAP. VIII.

Containing Directions for feeling the Pulse.

THE first Direction I shall give, is, to consider the Pulse in its natural State, and the uses of it, which are to promote the Circulation of Humours, by which the *Crasis* and Fluidity of our Blood is preserv'd, as well as the mixture of its serous and viscid Parts.

The Circulation also prepares and digests all the natural secretious Humours, as the Choler, salt *Serum*, *Lympha lactea*, *succus Melancholicus*, and *succus Nervosus*, which all have several uses in the Animal Oeconomy; and the Circulation also expels all the excrementious Humours by Sweat and Urine, and the hot Air by Expiration.

All these uses a natural and healthful Circulation performs; and they are well carry'd on, when we find the Pulse in its natural State; but a preternatural Circulation alters the Humours, in which the

Vigour of the Animal Spirits is alter'd, or the natural Temper of the Blood, which is ſweetiſh like Chile; or the Organs of the Circulation are peternaturally affected, eſpecially the Heart, Lungs, and Arteries. All theſe Changes we may know by the Pulſe, and in feeling of the Pulſe we muſt enquire what is the preternatural Temper of the Blood and Spirits, or circulatory Organs.

The ſecond Direction I ſhall give, is, to find out the natural healthful Pulſe in every Perſon; the Method I ſhall preſcribe, is, to obſerve what number of Pulſes every one has in his perfect Health; by obſerving the Morning-Pulſes, before Eating, Exerciſe, or other external Accidents diſturb it; and I will give my Obſervations on my own Pulſe for an Example.

I find my Pulſe in a Morning by ſetting down the Pulſes, they will run in one Minute this Latitude from 66 to 86 in perfect Health; I therefore take the middle Number for my moſt moderate and healthful Pulſe, which is 76; and that frequently happens in my beſt Health.

If we Faſt till Dinner, the Pulſe uſually ſinks to its natural Number, ſo mine came to 76, and by this Method all the per-

perſpirable Vapors are ſpent; and when they are evaporated, my Pulſe will fall from 90 Pulſes over Night to 76 next Morning.

All Humours retain'd make the Blood Feveriſh, eſpecially the Perſpiration ſtopt; for the perſpirable Vapors retain'd, are the chief Stimulators of the Pulſe, and the chief cauſes of the Latitude every Pulſe runs in a Morning: I compar'd the Pulſe and the Morning Weight, *June* 1ſt, Morning Weight 164, Pulſes 80, *June* the 5th, Morning Weight 162, Pulſes 75 in a Minute, by which I found that the Pulſes ſunk with the Weight. But I have not fully experienc'd this Affair, neither is it eaſie to determine how far the Barometer and Thermometer alter the Pulſe; becauſe we often find the Pulſe to alter, tho' the Thermometer and Barometer continue the ſame; the alterations which happen by the external Cauſes, as Air, Exerciſe, Baths, ſoon ceaſes; but the Pulſes made great by Diet, or Wine, laſt longeſt.

It is requiſite that every intelligent Patient ſhould thus try his Pulſe in a Morning in his Health, that he may inform his Phyſician what number of Pulſes he has in a perfect Health, by which a Phyſician

may judge of his natural Conſtitution; and the Phyſician may know how far the diſeas'd Pulſe receeds from the natural Numbers; and whether the Numbers of the Pulſe are increas'd, or be deficient, by which he may diſcern whether 'tis a hot or a cold Diſeaſe; and whether a hot or cold Regimen and Medicines be moſt proper and agreeable; and all this the Patient himſelf may diſcern by the Pulſe; and then he will intirely acquieſce in his Phyſician's Judgment and Method, when he hears that both correſpond with the Pulſe; and the Patient will have this farther Satisfaction, to try by his Pulſe how the Medicine and Method alter his Pulſe towards its natural State, by its returning to its natural Numbers; ſo if I be in a Fever, the Pulſe will ſink after one Ounce of the *Cortex* to 90 or 80, from 100 Pulſes in a Minute, and after a ſecond Ounce will return lower; and by this Method we ſhall know when we have taken a ſufficient quantity of a Medicine.

By our Senſes we muſt know the Nature of each Pulſe; and by our Reaſon we may diſcern the Faults in the Humours which alter the Pulſe.

We

We must first examine whether our Pulse runs too high, and exceeds the natural Numbers in a Minute; for then it over-digests and rarifies the Blood and Spirits, and makes the Secretions Bitter, Acrid, Salt, very Acid, and all the Evacuations of the secretious Humours are very violent.

When the Pulse runs too slow, the Blood and Spirits are too dense and cool, and crude; and all the Secretions are ill prepar'd, being either sweet slimy, *acerbe*, vitrious, or serous; and all Evacuations of excretitious Humours are ill perform'd or obstructed.

All hot Diseases, as Fevers, Pains, Inflammations, and Hemorrhagies in the beginning; and Vapor-Fits from high Passions, inward Abscesses, *melancholia Hypochondriaca*, the Scurvy, Gout, Asthma, Stone, Obstructions, have a quicker Circulation than is natural.

These Diseases have a Circulation too slow, Dropsies, cold Catarrhs, Lypothymias, Varices, Polypus, too great Obesity, malignant Fevers, long Hemorrhagies, and all excessive Evacuations, Grief, Sickness at Stomach, Convulsion Fits; a weak Intermitting Pulse produces a Vertigo, Scotomia, and Lypothymia, and the Circulation is too slow; Sleepiness and

Heavineſs of the Head are ſigns of a ſlow Circulation thro' the Head; and Swelling in the Legs are ſigns of a ſlow Circulation thro' the Legs.

We know a languid Pulſe when 'tis ſlow and rare, and ſmall; and in all ſuch the Circulation is ſlow.

A great and a high Pulſe is a ſign of a *Plethora*.

We know an oppreſs'd Pulſe when great and ſmall; ſlow and rare Pulſes, quick and frequent Pulſes are mixt.

The Pulſe is weaken'd by Faſting, Watching, Evacuations, Solicitude, Sadneſs, Pains, eſpecially in the Stone, and moſt by Vomiting, venereal Acts, violent Purges.

The Fevers uſually run the Pulſe to 100 in a Minute, yet we muſt conſider that divers Conſtitutions which are of the cold Kind will make the Pulſe to alter from that Number; and ſometimes a particular Symptom will alter the Pulſe proper to any Diſeaſe. I obſerv'd that the Pulſe run about 90 in an old Woman in her Fever, and if a Sopor be added to a Fever, it alters the Pulſe, and makes the Beats ſlower, and ſo all Evacuations do.

The Pulſe is moſt properly conſider'd in its *Ictus*, which ſhews the Vigor of Spirits, and the *Intervallum* which ſhews the Heat of the Blood; a ſtrong Pulſe makes a ſtrong Impreſſion on the Fingers, and gives a great reſiſtance to the Touch, and a week Pulſe reſiſts little.

The Celerity of the Motion is diſcern'd by a quick Stroke, and ſudden receſs from our Touch; we know the frequency very well, but it requires a great Nicety of feeling to meaſure the Strength and Celerity in Diſeaſes, which we muſt do by comparing them with the natural Strength and Celerity; and theſe want ſome Mechanical way to meaſure them, the frequency is well meaſur'd by the Minute Glaſs.

We muſt get a right Idea of a moderate Pulſe as to Strength and Celerity, by often feeling of the Pulſe of healthful People in a Morning Faſting; and the Pulſe will appear moſt natural in the middle of the Spring, and Autumn.

Our Patient's Pulſe muſt not be diſturbed by Paſſions, Meat, Drink, Exerciſe, Sleep, Evacuations, different Seaſons, and Changes of the Air: And we muſt alſo conſider the Conſtitution, Sex, Age, the Climate, and time of the Year, becauſe a par-

a particular Number of Pulſes belong to every of them; and *Galen* directs in this, to get the Knowledge of a particular Conſtitution, by conſidering the Colour, Habit, Heat, Age, Temperament, Strength, Cuſtom or Study, Manners, Sex and State, of the Air, Country, time of the Year. If we conſider all theſe Circumſtances, we ought to take a Quarter or Half an Hour to feel the Pulſe of our Patient; our Pulſes are generally obſerved different in one Arm from the other, becauſe of the Difference and Situation of the Artery, or one Hand is uſed more than the other, or becauſe we lie in Bed more on one ſide; but the moſt probable Reaſon is, becauſe the Artery lies higher in one than in the other Arm, and proceeds more ſtreight or more bending, and the Ramifications of the Arteries are different as well as the Veins in the Hands.

The Old Direction was to apply three Fingers to the Arms, or two, but I think one is more diſcerning, and leſs apt to impoſe on us, becauſe the feeling with three Fingers may give us a falſe Notion of that we feel; and ſince the Artery is now known to move in all parts at once, for at the ſame time the Heart conſtringes it ſelf and ſtrikes the Ribs, we diſcern the

the Pulse in the Artery, as if a Solid Body were moved at one end, it moves in the same time at the other; so it is in the Artery when 'tis filled with Blood; and since we can touch but a small part of the Artery, we cannot discern the Celerity of the Motion of the Blood, as it passes from one part of the Artery to the other, but our Reason infers it from the Celerity of the Arteries impression on our Fingers. I generally feel my Artery by my Thumb, and the reason of prescribing many Fingers was the Opinion of the Arteries moving it self differently in different parts.

The Fingers may either compress the Artery much, or touch it lightly, or be apply'd in a moderate way, with a moderate compression, according as the strength of the Pulse is; for a weak Pulse is stopt by a great compression.

The feeling of the Pulse in Fat People is very difficult, but it appears most evidently betwixt the Hand and Wrist.

In the feeling of the Pulse we must bend the Hand towards the Wrist, that the Artery may be a little relaxed, and better distended by each stroke; and in weak Pulses we must turn the Wrist down wards, or in such Posture as the Artery may best approach to the Fingers freely.

I will

I will give the following Obſervation I made on my Pulſe in *September* laſt.

The Morniug Pulſe, Faſting, was 76, after rubbing with Bruſhes 86, and this did ſtand ſo ſometime, but at laſt return'd to the Morning Pulſe, which fell to a lower Number before Dinner: After Dinner the Pulſes were 89, and before Supper 83.

Another Day the Pulſe before Dinner was 77, and after Dinner it was 95. I Drank ſome Ale after Dinner, and two Diſhes of Coffee after it, by both the Pulſe was raiſed more than ordinarily it is after Eating.

The Night before an *Aſthma*-Fit, I generally obſerve my Pulſe about 90, and in the Fit, at leaſt, 95, and ſometimes more, that Number ſometimes laſts two or three Days; and at other times when the Fit is ſhort, the Pulſe for two Days after the Fit ſtands at 85, or thereabouts. I give this Inſtance to ſhew how we may know our Diſeaſes approach by the Number of the Pulſes, and by the ſame we may diſcern the Degrees by which it goes off.

I obſerved the Pulſe in the *Intermitting-Fever* to be 100; betwixt the Fit 85, after a Doſe of *Laudanum* on the intermitting Day

Day 80, after an Ounce of the *Cortex* 90.

The ſlower my Pulſe beat, the better is my Breath, and if my Pulſe be 90, I am always Purſive, but 95 makes me *Aſthmatick*, I am of a Lean Habit; but in the Fat *Aſthmaticks* the Number of Pulſes will vary, yet in all Perſons, every Fit of the *Aſthma* is a Fit of the *Ephemera Fever*, as may be demonſtrated by the frequency of the Pulſe mentioned, which is 95 or 100; and if the Pulſe comes to thoſe Numbers by accidents of Diet, Exerciſe, Paſſion, it ſoon returns to its natural Numbers; but whilſt it continues ſo high I am Purſive.

Since the Pulſe comes to its Natural Temper before Dinner, we may then obſerve its Natural Number, as well as in the Morning; ſo I had obſerved the Pulſe to fall from 86 in a Morning to 72 before Dinner. In feeling of the Pulſe we may obſerve that it runs a Latitude of 20 Beats in its common variation, by Diet, Air, Exerciſe, Conſtitution, *&c.* The hot Tempers are apt to run from 75 to 90 in a Minute, or 95, without any great diſorder, or ſettled Diſeaſe, but they ſoon ſink again.

We

We can no other way so clearly distinguish the several Constitutions as by the Pulse, which discovers the Heat and Rarifaction of the Blood and Spirits, and the good or bad Secretions.

Choler is produc'd by a long Circulation, as well as a salt *Serum*; and there is but little of Choler and Saltness in Childrens Bloods; phlegmatic crude Chyle, and a crude *Serum* abounds in them, and a Sourness appears in their Stomachs; but Choler and acrid Salts, and a vitriolic Acidity abounds in the Humours of Adults, and in hot Tempers, who have exceeding Pulses; and these Tempers of Humours are the effects and signs of great Circulations.

In a bilious Cachochymia the Pulse is vehement and vibrating; and 'tis also great, quick, and frequent. In these the Commotions of Spirits are vehement, they are inclin'd to Anger, Venery, and Revenge; they are Couragious, of ready Wits, and Sharp, Bold, Boasting, fit for Business, and Careful; they dream of Fire, Tumult, Strife; all the motions of Body and Voice are quick, their Senses sharp, they soon grow old, they have thin Habits, Baldness, heats in the Hands, Hectics, Fevers, Phrensies, choleric Vomits, and Fluxes,

Ery-

Eryſipelas, Puſtules in the Face; they have an Appetite to cool Things, and are injur'd by hot. I have diſtinguiſh'd theſe choleric Tempers into 3 Degrees; 1. The bitter Acrid; 2. The bitter Salt; 3. The bitter Acid; and theſe have all the ſame Digeſtions and Qualities in divers Dedegrees.

The ſanguine Tempers have a great and ſlow Pulſe, and a full one; in theſe their Imaginations are Gay and Pleaſant, their Apprehenſions and Senſes good, but their Reaſoning is dull, and their Memory weak; they are of a ſerene Mind, Chearful, Free-Talkers, of a profuſe Laughter; their Dreams are Pleaſant, of Gardens, Muſick, Weddings, great Perſons; they Sleep much, and are inclin'd to Venery, their Motions are moderate, they Eat and Drink much, uſe little Exerciſe, live without Care, they are ſubject to Hemorrhagies and Fevers, they are much reliev'd by Bleeding.

The cool pituitous Cacochymias are dull and ſlow in their Wits, and Sleepy, eaſily appeas'd in their Anger; their Senſes are dull, Motion ſlow, as well as their Voices; they are Forgetful, dream of cold Waters, or Rain, or Snow, Drowning, Seas; they are Slothful without Cares or

Study,

Study, Sedentairy, Idle; Heat agrees with them, and not Cold, or Moiſt; the Old, Fat Men and Women are of theſe Tempers; they are ſlow to Venery, ſubject to Catarrhs, Dropſies, Cachexies, Whites, Coldneſs in the Hands and Feet; the Urine is Pale, much Phlegm, ſoft, ſmooth, cool Skins, white Complexions, the Habit Soft, Fleſhy, Fat. I have made three Degrees of the pituitous Tempers, the ſweet Slimy, the watry Slimy, and the ſlimy *Acerbe*.

I call the *Acerbe* Slimy the cold Melancholics, whoſe Motion is ſlow and grave, the Pulſe alſo hard and ſlow; they Spit much, have little Thirſt, acid *Ructus*, cold Winds, pale Water, cold and dry Skins; they have Fear and Sadneſs without Cauſe; they are difficultly provok'd, or appeas'd; they have a ſad Aſpect, obſtructed Spleens, Varices, thick Blood, unequal Pulſes, dull Senſes, firm Memory, difficult Perception; they find Benefit by hot Diet, and Injury by Acids, and the Cold; they are very Solicitous, Studious in Autumn, and the Age from forty to ſixty this Conſtitution prevails moſt, their Face is Lead-colour'd.

In the hot Melancholics, or *Atrabilarians*, they want Sleep, are Furious, full of Cares,

Cares, Frightful, Inconſtant, of a horrid Aſpect; they are ſubject to Phrenſies, Convulſions, Hyſteric and Hypochondriac Fits, Epilepſies, *Incubus vertigo*, hot Winds, inflations of the Stomach, convulſive Pains, Quartans, Scab, Elephantiaſis, Hemorrhoids, Vomiting and Purging of black Humours; they are inclin'd to Venery, they have diſturb'd Dreams of Sepulchers, Divils, Fighting, Murders, their Pulſes are very frequent and hard, and unequal. I have counted 90 and more Beats in ſuch Tempers, the Habit is thin, and Fleſh hot and dry, and Hairy.

In the ſalt Cacochymia the Blood is ſalt and putrid, and they are ſubject to the Scurvy, Ulcers, Herpes, Pains, itching in the Skin, Laſſitude, ſalt Rheumes, Strangury, Stone, Gout, falling of the Teeth and Hair, putrid Gums, leproſe Scurfs, ſcorbutic Spots in the Skin, ceruginoſe Vomits, Laſcivious; their Skins are hot and dry, and their Habit thin.

We find out the hot Cacochymias thus, I place the *Atrabilarian* from 90 to 85; the ſalt Conſtitution from 85 to 80, the Choleric from 80 to 75, the Sanguine and Temperate ſtands betwixt 75 and 70.

The cold Conſtitutions I place at theſe Numbers, the Phlegmatic or ſweet Slimy

betwixt 70 and 65, the watry Slimy betwixt 65 and 60, the *acerbe* vitrious Slimy betwixt 60 and 55.

We may Prognosticate from these Numbers of the Pulse what the Passions, Wit, Constitutions, and Diseases any Person has, or is inclinable to: *Galen* observes in his Comment on *Hipporates*'s Book of Humours, that Understanding and Knowledge are appropriated to the choleric Tempers, Phlegm is contrary to them, Pleasures are delighted in most by the Sanguine, and Continence and Study are most observable in the Melancholic; the Change of the Humours changes the Actions of the Mind, and the Passions of the Mind evidently change the Humours; a little adustion of the Humours makes Men Cautious, Prudent, Cunning, Constant, Ingenuous; but a great Heat makes them Atrabilarious and Furious.

Note, That in all natural States of the secreted Humours the Pulse runs near the beginning of the Latitude of its Numbers, so in the cold Melancholy I place that from 65 to 60; but if that becomes vitrious and very *acerbe*, I must place it at 60, and probably lower; so in the phlegmatic Tempers, when the healthy State

State remains, the Pulſe runs near 70; but if the phlegmatic Cacochymia be great, and produces Cachexies, the Pulſe runs towards 60, ſo it is in the choleric and ſalt Secretions; in natural Conſtitutions, the Pulſe runs in the beginning of the Numbers aſſign'd to each Conſtitution; but as they are vitiated in thoſe Cacochymias, the Pulſe runs higher, as in the cold Cacochymias, the Pulſe always runs lower; and this is the difference betwixt a natural Conſtitution which depends on a ſecreted Humour, which abounds more than the reſt of the ſecreted Humours; but if that Humour be deprav'd by a higher Digeſtion, it runs the Pulſe higher; if deprav'd by a ſlow Circulation, it runs the Pulſe much lower; therefore before we judge of any Cacochymia, we muſt conſider the natural Temper made by the prevailing ſecreted Humour, which gives the Denomination to each natural Conſtitution; and the Cacochymia is ſome depravation of the natural Humour either by a faſter or ſlower Circulation.

The Diſeaſes of the Lungs, as Inflammations, Schirrous, Intemperies, Defluxions by their Vicinity to the Heart, alters its Contraction by heating of it, or

obſtructing the Motion of its Blood from the Right Ventricle, or by imparting ſome Sanious Ferment to it. All Defluxions make unequal Pulſes; the ſubtil Matter leſs, but the thick and viſcid, oppreſs the Lungs more; and every Diſeaſe of the Lungs alters the Reflux of the Blood, and conſequently the Pulſe alters its frequency; a rare, ſlow and ſmall Reſpiration, make the Pulſe ſo too.

The Liver communicates with the Heart by the *Vena Cava*, and its Intemperies affect the Pulſe by heating of the Blood, or infecting its Maſs with Choler, Orpus, or obſtructing the Motion by Compreſſion.

The Stomach communicates with the Heart, by its Nerves and Veins; ſo that the Pains, Inflammations, Tumors and great Quantity of Meats, or Ill Humours, affect and alter the Pulſe.

The Brain communicates with the Heart, by the Nerves and Jugulars, Lymphaticks and Membranes, and its Inflammations, Tumors, Convulſions and Oppreſſions, alter the Pulſe; the *Viſcera Schirroſe* make the Pulſe harder than when Inflamed.

The

The Habit of the Body communicates with the Heart, by Nerves, in Pains, Convulſions, by the Blood Veſſels, in Tumors; ſo Inflammations and Schirrous make the Pulſe hard, ſerous Tumors, ſoft; thoſe Parts which are neareſt to the Heart and the great Veſſels, alter the Pulſe moſt; thoſe which are remote and near ſmall Veſſels, leaſt.

PART II.

CHAP. I.

Containing a New Mechanical Method, for preserving the Health, and prolonging our Lives.

WHEN we have observed what Pulse is most Moderate and Natural in our Climate, which I find to be betwixt 70 and 75 in a Minute, in a Morning; we must farther Inquire, what is the particular number of Pulses, most frequently happening in our best Healthful State; and then we must endeavour to preserve our Pulses in as near numbers as can be to the Healthful Pulse in our Climate, and so to regulate our Pulses as to reduce it to those numbers in

which we find the moſt exact Health in our particular Conſtitution; and we muſt endeavour to preſerve the naturalStrength Greatneſs, Celerity and Crebrity; for by them we diſcern the natural Vigour of Spirits, a right *Craſis* of Blood, and a due performance of all Secretions.

The nearer our particular Pulſes come to the number of Pulſes proper to our Climate, the more Healthful our Conſtitutions are; and our chief Care muſt be to uſe ſuch Air, Diet, Exerciſe, *&c.* which may keep our Pulſes in ſuch numbers as are ſuitable to our Climate, and to our particular Conſtitution.

Our Air is more inclined to Cold than Heat, therefore our Pulſes incline to a greater Variety and Vigour than their's, who live under the 45 Degree of Latitude from the *Equator*; the cold Air, cold Liquors and cold Bathing, will help to preſerve the Spirits, Humours and Pulſe, in the natural State.

The natural Heat is increaſed by the cloſing of the Pores in the *Northern* People, tho' the External Cold will depreſs and weaken the natural Heat, where 'tis extream in the moſt *Northern* Climates, and there a Diet of Fleſh is neceſſary to ſupport the natural Heat, and to oppoſe the extream

tream Cold; but a moderate Degree of Cold gives a great Vigour to the Spirits, and makes the Pulſe more Vehement, Great and Strong.

We muſt ſupport our decaying Circulation by Exerciſe, Friction, tepid Baths, warm Diet, and hot taſts in our Diet and Medicines; we muſt Walk or Ride before Dinner for an Hour or two, and we muſt ſtop all unnatural Excretions, Sleep little, and be angry, full of Cares.

The Circulation, if it runs too quick, will require cool Air, cool Diet, cold Bath, Sleep, Paſſions of Fear, Reſt, and all Excretions by Sweat and Urine, muſt be promoted in the natural Quantities, by which the Blood will be kept cool. We may Sleep Nine Hours, for after Sleep the Pulſe ſinks its numbers.

The Paſſions of the *Northern* People are violent, as Anger, Revenge, Pride, Boldneſs; the Regulation of theſe will keep the Pulſe in its due numbers, for Anger, and all hot Paſſions, cauſe the Pulſe to exceed.

This is a certain Rule, Emptineſs by miſſing a Supper or Breakfaſt, and a perfect Perſpiration being over, (as it happens by Faſting till Dinner, the Pulſe ſinks) and on the contrary, Fulneſs of Meat in the Stomach and Chyle in the Veins,

Veins, or other Secretious Humours retained, always raiſe the Pulſe.

I will here give my Notions, how we may uſe the Pulſe Watch for the Prolongation of our Lives.

Our Life conſiſts in the Circulation of our natural Humours and Blood, and in the Expulſion of all Excrementitious Humours; when this is well performed, we may diſcern by our Pulſe-Watch, which ſhews us when the Pulſe is perfectly Healthful, or how far it exceeds, or is deficient in its natural numbers.

Whatſoever preſerves the Circulation of our Blood, and the Vigorous Motion of it, that is a proper means for preſerving of our Lives.

Whatſoever preſerves the immediate Cauſes of the Circulation, preſerves the Circulation. The Cauſes are,

1. A brisk Vigour, and good State of Animal Spirits.

2. A due innate Heat or Rariſaction of the Blood.

3. A right Diſpoſition in the Circulating Veſſels; and eſpecially a right Inſpiration and Expiration, which cauſe the Reflux of the Blood to the Heart, thro' the

the *Vena Cava*, after the Pulse has forced it thro' the Artery ; and there must be a right Disposition in the *Glands* to receive the Secretious Humours.

From the former Reflexion, I have Collected these Intentions for the Prolongation of Life.

1. We ought to preserve the Vigour of the Animal Spirits, to contract the Heart with due Force.

2. We must preserve the natural Rarifaction and *Crasis* in the Blood, which moderately irritates the Heart to a Vigorous Contraction.

3. We must help the natural Secretions, and expel the Excrementitious.

4. We must renew the Decay of the Solid Parts, and of the Fluid, and expel the decayed Nutriment.

1. We must preserve the Vigour of the Spirits. The Lord *Verulam* describes the Animal Spirits to be of a middle Nature, betwixt Flame and Air, and that they are made of the florid Parts of the Blood ; the *Microscopes* have discover'd that the Blood consists of *Globuli* and the *Vacuum*. *Boylianum* discovers that the Air is continued in them, which agrees with the afore-

foresaid Opinion; to the Air our Spirits owe their Elasticity, and Sympathy with the External Air; and we can add little to this Old Notion, but that these *Globuli* make a *Succus Nervosus*, when they have passed the *Glands* of the Brain.

Our Spirits must be Vigorous, but neither too hot, eager, nor too languid and cool; the Spirits must be somewhat condensed, not too rare, in quantity sufficient, in Motion not over Agitated or Stupid.

1. These things raise the Vigour of the Spirits if too little Rarified or Crude, condensed or deficient, grateful Odors, and the strong Fetid, as *Volatile Salts*, *Volatile Acrid*, *Plants*, *Acrid Fetid Gums*, *Coffee*, *Musick*, *Friction* of all the Body, but especially the Head, Wine, and all Fermented Liquors; Love and all Heroic Passions, great Designs, Chearfulness and Hope prolong Life; but Admiration and Contemplation agitate the Spirits as well as Cares and Study; but if they be Excessive, they shorten Life. Serene cold Air strengthens the Spirits, and in great Frosts our Spirits are lively. A warm Air also raises the Spirits and rarifies them.

2. These

2. Theſe things condenſe the Spirits: Cold Air, Niter, which taſts cold, cold Baths, waſhing the Head with cold Water, Opiates, which ſtop the great Agitation of Spirits, and the Pulſe, and theſe muſt be uſed moſt in *Summer*; uſe one part of Niter with ten of Salt, with all our Meats, or ten Grains of Niter in our Broths or Water, all ſorts of cooling ſlimy Plants, Borrage, Bugloſſe, Lettice, Cichory, all Acid Fruits and Cucumbers, Melons, Pompions, which are Sweet, but Crude, Slimy, Watery.

3. Theſe Things abate the exeeeding quantity of Spirits, ſpare Diet, drinking Water, a hard Bed, abſtinence from Fire, a Diet of Herbs, Fruits, Fiſh, Salt Fleſh, Hair Shirts, frequent Faſts, and Watching, Fear, few Senſual Peaſures, much Venery, and all great Evacuations by Bleeding, Exerciſe, Bathing, Vomiting, and Purging, Great Paſſions, Labours, Study: Hot Baths Cure Pains, Malignant and long Fevers ſpend the Spirits, all theſe are neceſſary for Furious and Turgid Spirits, but muſt be avoided by weak Spirits.

4. Theſe things ſupply a defect of Spirits, as the Body is Nouriſhed by a Diet of ſweet Taſts; ſo the Spirits are by Aromatics

matics, we must use the Nutritive Diet, Eggs, Wine, Flesh, Spices, Chocolat, Milk to supply the Spirits, and we must excite and please them, by a gentle Agitation, by Musick; all Aromatics have an agreeable pungent Odor pleasing to the Spirits, such are Saffron Ambergrice, Musk, Cinnamon, Ginger, Nutmegs, Cloves, Candid Ginger, Nutmegs Candid. All these may be mixed into an Electuary, with Syrup of Cloves, and add as many Leaves of Gold as there are Ounces of Electuary.

The Cordials may be Stypticks as well as Aromatic, as sign Alloes, Saunders, Amber, Citron, Red Roses, Myrtle.

The hottest Aromatics in Diet, are Cloves, Ginger, Cardamons, Nutmegs; and these may be infus'd in Vinegar with Garlick for Sauces.

Ambergreece is of a moderate heat inwardly, and outwardly Crucus and Castor, more powerfully excite the Spirits.

Galen observes, that the Spirits are Nourished by Air as well as Odors, if it be subtil, pure cool, lucid, free from Fogs, Rain, Snow, avoid Moist and Fætid Habitations, or where the Air is moved violently or not at all, and where there

are great Heats and Colds, all Dungel places and ſtanding Waters and putrid Countries.

Ficinus adviſes thus, *Utantur igne tamquam Medicina*, that is, to warm us when Cold, and to excite the Natural Heat. And he preſcribes the following Elect. to preſerve the Wit, Memory, Senſes, it alſo helps Digeſtion and Secretions, and the Circulation of Humours. Take Thus: Two Ounces, Myrrh, One Ounce Leaf Gold, half a Dram; make it into Pills with any Syrup; but I would rather make them into an Electuary with Honey, add One Pound, Saffron, One Dram of Nutmegs, Two Drams of *Venice* Treacle, has a like effect; take it at Night.

Hot Air perſpires too much, and againſt them cold Baths and Oyls are preſcribed; or Wine with Myrtles and Roſes, and Roſin, have been uſed for an External Lotion.

In hot Air, all Men uſe more Liquids, and in the cold, more Solids of Fleſh, and more Fermented Liquors.

5. The Irregular Motion of the Spirits, are ſtopt by Sleep, Reſt, compoſing the Affections, Drinking cold Water at Night, by the frequent uſe of cold Baths, and by the uſe of Opiates; Shame contracts the Spirits

Spirits as well as Sadneſs; Joy quiets all the diſturbances of Grief, the Spirits are delighted with Novelties and Change, Eaſe, Reading, Converſation, Building, Painting, Experimental Philoſophy, and theſe are proper Entertainments for Old Men, who are often pleaſed with the Company of Young Men and their Sports, according to the Remark of *Ficinus*, *Difficillimum eſt rejuveneſcere corpore niſi prius ingenio repuereſcas*. Tranquility of Mind, and Chearfulneſs, are ſigns of a good Temper of Spirit, and we keep them in that State by reſtraining the Affections, by a Temperate Diet, Moderate Labour, avoiding Venery, and all extraordinary Evacuations. Avoid all theſe things, which make the Spirits Turbulent, as much Study, Cares, violent Paſſions, Faſting, Venery, great Projects, great Exerciſe, changes of Weather, Fevers, ſtrong Smells. It is not the Depredation of Air on our Bodies; but the alteration of our Spirits by it, which injures our Healths.

We know all theſe diſorders of Spirits by our Pulſe-Watches, and by feeling of the Pulſe, we know the great Rarifaction of our Spirits, and their exceeding Quantity by a great and vehement Pulſe, and the condenſation or deficiency of Spi-

rits

rits by a weak and ſmall Pulſe, the heat and frequency, and degrees of Irregularity will appear by the numbers taken by the Pulſe-Watch.

We muſt preſerve a due Heat and Rarifaction, and ſweetneſs in our Humours, by a Diet moderate as to Heat, and of a ſweet Taſte which will breed an Oily, ſweet and viſcid Nutriment; and mild, ſtrong Spirits, the coolneſs of our Humours hinders their evaporation; and this muſt be procured by a cold Regimen, cool Air, cool Cloathing; many Cloaths ſpend the Spirits and Strength. All Aliments of a firm Texture, ſpend leaſt, as Beef and Pork, ſalt Meats and Styptics, as Decoction of Oak or Vine-Branches, in our Bread, Coral, Pearl, in our courſe Bread. Water-drinking with a little Niter, Broths with Vine-buds, green Juice of Wheat, the uſe of Oyl feeds the Body, becauſe 'tis roapy and ſweet, and *Ariſtotle* has obſerved, Ἐν τῷ ζῶω τὸ λιπαρὸν γλυκὺ, the Blood muſt not be too fiery or ſalt, or viſcid, or vitriolic, nor too Pituitous, *acerbe* or watry, or over-cooled.

'Tis no ill Advice to avoid all putrid Diet, and thoſe which are apt to putrifie, as Fruits and Herbs, and to feed on thoſe Creatures which live long, and are whol-

ſome, to Eat no more than we can digeſt.

All thin Bodies muſt have a more cool and ſlimy Diet, and no hot Fermented Liquors; they may uſe much Oyl, Milk, Broths, and the moſt ſweet and nutritive Diet; they muſt avoid too much Coition, great Exerciſe, Cares, Study and all great Evacuations of Nutritious Juices, by Urine, Sweat, Looſneſs; they muſt ſtop the Pores by Oyl of *Maſticke* or *Quinces*, with cold Bathing; they muſt avoid Hunger, Watching, Anxiety, Labour, Anger, Pain, hot Air, hot Baths; for all theſe cauſe a deficiency in the quantity of our Humours.

All Fat Bodies are more cold, and want hot Diet, more Exerciſe, Study, and all the Regimen to keep up a natural Circulation, which is too ſlow in the Pale and Fat; they muſt avoid Sadneſs and Sloth, and all Satiety of Meat and Drinks, too much Sleep, all which ſtop the Circulation.

Old Men muſt avoid variety of Meats, and all great Quantities, great Labour and Venery. Young Company preſerves their Lives long, the uſe of Ever-Greens, as Pine, Lawrel, Olives, Bitter-Almonds, and all the Kernel-taſts prevent Putri-

faction

faction in our Humours, and help our Digestions.

The Bodies of Old Men are best Nourished by Milk, Broths, Eggs, small Ale, Honey-Drinks, Sugar agrees with them, and it preserves all Bodies from Putrifaction; use Pine-tops in Ale, and anoint outwardly with Oyl and Wine, to which the Old Writers added a little Turpentine. Old Men may suck the Milk of a Young Woman, which with natural Transfusion of Chyle, and more natural than the Blood of Young Children, as *Ficinus* advises. Good Broth, Bloody Gravies are very Nourishing, easie Motion will excite the natural Heat, as Walking and Gestation; by the Pulse-Watch, we find when the Blood runs too fast or too slow; and by the same we may find the effects of each Diet, Exercise, Passions and Air; and by the number of Pulses we know when we must use a hot or a cool Diet, and what Method for preservation of Health.

3 The Secretions are preserved by the same means as preserved the Circulation, and also by those Medicines which have the same taste as the secreted Humours, the Stomach must be kept clean by Aloetic Purgers, by bitter Things, and warm Drinks are commended; and the Lord

Verulam discommended cold Liquors in a Morning, as Whey, Barly-Water; cold Juices, keep the Stomach externally Warm, by a Bag of Scarlet Wool, Myrtles, Citron Pills, Saffron dipt in Red Wine; the Body must be kept neither too Loose nor too Bound.

In *England* our cold Air hinders Perspiration, but promotes Urine; therefore by *Diuretics* we must preserve our Health, more than by Diaphoretics, the acrid Plants are the best Diuretics, as Scurvy-Grass, Mustard seed, or the Juice of Water-Cresses, Turnep-seed in Ale, with Broom and Antimony, of each One Pound in Six Gallons, this is the *Gout Ale.* Use Steel Drops towards Spring and Fall, to prevent Obstructions of the Secretions, and quench Gold or Steel in all our Liquors.

The Heart is preserved by the same means as preserves the Circulation; as the frequency of the Pulse sinks, so we find some Secretion increases; and as the number of Pulses rise, so we find some Secretion obstructed.

The Brain is preserved by the same means as alter the Spirits.

We know the Temper of the Blood and Spirits by the Pulse; therefore we must consult, that in the preserving the Heart and

and Brain, and by that we may discern the Intemperies, and other Diseases of those parts.

4. The Secretion of Excrementitious Humours must be helped; so the Phlegm and Choler may be Purged off once in 14 Days, by Aloetics, in decaying Constitutions, such are those called *Scotch Pills*; thus I make them. Dissolve One Ounce of *Aloes* in Elder-flower-water, Four Ounces evaporates to the consistence of Pills, add *Cremero Tartari*, Juice of Liquorish, and Two Drams, with Oyl of Almonds, make Pills. These may be taken Two or Three at Night, to stimulate the Peristaltic Motion in Old Men, in whom it is decayed, and moves slowly; and 'tis useful to the Infirm and Asthmatic, and Hypochondriac. The Urine is best promoted by Mustard-seed, One Pound in Four Gallons of Ale. We may promote Sweat, any Night, by *Tea* and Spirit of *Sal Armoniac* 30 drops in it. Friction and Exercise help all Secretions, and so do Tepid Baths, which they do by promoting the Circulation; the Skin must be kept clean by Wash-Balls, the Swear, Urine and Stools, must be proportionable to the Diet; and when they are deficient, the Pulse rises in its num-

ber, but if they exceed their due proportion, the Pulſe ſinks, therefore by the Pulſe we know the Exceſſes and Defects in the Secretion; and which Method we muſt uſe every Day, if the Pulſe be exceeding, we muſt help the Excretions; if deficient, we muſt ſtop all Evacuations. Too much Secretion conſumes the Body, and cools it too much; the want of Secretion of the Natural and Preternatural Humours, produces ſome Cacochymia, or a Putrifaction, if it occaſions any great Ebullition of Humours; cold Baths ſtop all the Exceſſes in our Secretions.

5. The decay of the Solid and Fluid parts muſt be renewed, *viz.* The Dryneſs, Coldneſs, and Extenuation of the Habit of the Body, by Nouriſhing Diet, as by Milk, Sack, Broth, ſmall Ale; and externally we muſt uſe Friction, then Unction, after that a tepid Bath for an Hour, then repeat the Unction, keep out of the Cold, uſe warm Drinks and full Diet, a Hair Shirt and Nettling attract Nutriment.

Galen in his Book of *Marcor* or *Maraſmus*, imputes Old Age to the Drineſs or want of Nouriſhment in the Heart, which like other Muſcles of the Body, becomes

comes extenuate thro' Age; and he calls the Heart the principal part of the Body, and that Life depends on the Motion, and Death on the Ceſſation of it; as the Muſcles of the Heart decay, ſo does the Circulation and Life; this is beſt repaired by Nouriſhment, Aſſes-Milk, Womens-Milk, Wine, tepid Baths.

There ought to be a different Nutriment of Old Men, according to their different Conſtitutions; the Pulſes of Old Men is ſmall, becauſe of the weakneſs of Spirits, and their Blood is little Rarified; thoſe Old Men who are naturally of a hot Conſtitution, or are Hectical, have a quick and a ſmall Pulſe; but thoſe of a cooler Temper, have a ſmall and a rare Pulſe; for thoſe with a quick Pulſe, we muſt preſcribe a cool Regimen, but for thoſe with a ſlow and rare, the hot, Hony, warm Baths and Wine agree with theſe cold Tempers; and Milk and Water-drinking, and cold Baths, with all the hot Tempers.

Galen commends tepid Baths for helping the diſtribution of our Meats, and curing all Extenuations, whether in hot or cold Tempers, for they can produce contrary Effects in cauſing Thirſt, and Curing of it; they cool thoſe who are

heated by the Sun and Travel, by opening the Pores; they also heat those who are over-cooled by cold Air. Putrid Fevers are Cured after Coction by Baths, and so are Hectics; but if any Inflammation or Erysipelas attend a Hectic, we must first Cure that by Diet and Water-drinking before we use a tepid Bath; drinking cold Water is proper for divers Fevers, after the Third Day; and Bathing also. These tepid Baths will Cure all Drineſs from Venery; Cares, Anger, Watching, Fasting, Labour, Study, Solicitude and hot Medicines, which things all Old Men ought to avoid; or Cure by these tepid Baths, or the cold ones, according to their different Constitutions; and Unction is very necessary, with their Bathing, for their dry Bodies, after Exercise, Friction, their Diet must in general be light; tepid Baths, Sleep and a soft Bed, nourish.

I observed in an Old Man that his Pulse before Dinner was 60; after Dinner it was 100; by which I discerned that he was Hectical, as most Old People are; and I observed the same Crebrity of Pulse in an Old Woman of 70.

Theſe following Obſervations I took at our Hoſpital, where I felt the Pulſes of ſeveral Old Men in the Morning Faſting, in *May* laſt.

Ages.	*Pulſes.*	*Habit of Body.*
91	71	A thin ſpare Man
85	63	A thin ſpare Man
84	81	A thin Man.
83	84	A thin Man
80	97	A thin Man
78	78	A little Plump
78	71	A little Fat
75	70	Of a Moderate Habit
72	78	Of a Moderate Habit
69	77	A little Fat
69	76	Plump
67	71	Spare Man
62	71	A little Plump.

The Pulſe of thoſe who live long is great and rare, and this muſt be preſerved ſo; the Pulſe is generally too frequent in Children, which we ought to check by a cold Regimen; and the ſame muſt be done in Old Age, where they are Hectical; and if the Pulſe become ſlow and rare too much, we muſt accelerate it by a hot Regimen, for that is the beſt Regimen which reſtores the moſt healthful Pulſe; by the hot

hot Regimen we raiſe our Pulſes, help our Digeſtion, and promote all Secretions, and we check the high Fermentations and Evacuations of Humours by the cold Regimen; thus by the feeling of the Pulſe we diſcern all the irregularity of the Circulation, Digeſtion of Humours, and their Secretion; and by the Pulſe we find by what Method we muſt regulate all Exorbitances; which makes me to aſſert that by the help of the Pulſe-Watch, we may preſerve our Health, and prolong our Lives.

The Old Writers have given many good Precepts about this Subject, and theſe may be Read in *Ficinus*, Lord *Verulam*; and *Ariſtotle* firſt mentions the Deſign of prolonging Life, but the Authors mention'd, wanted a Rule whereby they might know, when they muſt uſe their Preſcriptions, and how much of them, and to what Conſtitutions; all which may be eaſily Learn'd by the Pulſe-Watch, which will ſhew us when to accelerate or ſtop the Pulſe by the help of the *Non-Naturals*. This is my Methodical Art of Diet, whereby I can raiſe the Pulſe to its natural Numbers and Frequency, or abate the Vehemence, Celerity and Frequency.

I hope

I hope all Young Phyſicians will conſider it, and ſo far improve this, as to preſerve the Lives of my Country-men, who may alſo by the help of a Pulſe-Watch, diſcern all thoſe dangerous Exorbitances, which are cauſed by an Irregular Diet, Violent Paſſions, and a Slothful Life.

CHAP.

CHAP. II.

Containing a New Mechanical Method for Curing of Diſeaſes.

ALL diſeas'd Pulſes either exceed, or are deficient in reſpect of the natural Pulſe in Number, Greatneſs, and Strength, Celerity, Frequency.

If any Diſeaſe cauſe the Pulſe to exceed the uſual Number of Pulſes in a Minute, 'tis a hot Diſeaſe, and requires a cooling Method; if the Pulſe be deficient in Number, it requires a hot Method to raiſe and accelerate it.

All the hot Cacochymia, as the Bitter, Acrid, Salt, and vitriolic Acrid (or *Atrabilis)* are produc'd by an exceeding Pulſe; and we muſt uſe a cool Method to Cure them by ſtopping of the Pulſe, which ſtill produces a new quantity of the cacochymical Humour; and we muſt Evacuate what is already accumulated, and alter the quality of Humours by a contrary Taſte.

In all the Obſtructions of the Glands and Veſſels we muſt promote the Pulſe, and excite a more vigorous Circulation; and help the Secretion by Simples of the ſame Taſte, which will irritate the ſecretory Veſſels as the ſecreted Humour does.

In all violent Motion of our Humours by exceeding Pulſes, as in Fevers, Defluxions, and Pains, and Pthyſis, we muſt ſtop the Pulſe by the cold Regimen, and by the cool Taſtes, and Bleeding.

In great Evacuations by Hemorrhagies and Looſneſs in the beginning, we muſt ſtop the feveriſh Pulſe by the ſame Method as we Cure Fevers; but when Evacuations have continu'd too long, we find the Pulſe too low; and then we muſt raiſe it by ſtopping of the Flux, and by that as well as the hot Regimen, we ſhall accelerate the Pulſe.

The hard Pulſe is from Obſtruction in the Artery, and it requires the Method for evacuating the Cacochymia which occaſions it, whether hot or cold; we evacuate it by Bleeding, and Purging, and Sweating, till the Pain and Fever which accompanies Obſtructions do ceaſe; and then we muſt dilute the Viſcidity of the Humours if it be ſizy, as in the hot Cacochymia by a cool Method; Bleeding is

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moſt proper for fourteen Days, with lenitive Purges; but in the declination Vomits, Mercurial Purges, and Sudorifics help off the remaining Viſcidity; for after twenty one Days the Sizineſs is digeſted or putrified; and after all we muſt promote the Motion and Circulation to prevent all future Obſtructions.

If Obſtructions be from Pituita, Viſcida, or the cold Cacochymia, that muſt be cur'd by Purging or Vomiting of that Cacochymia; and the ſlow Pulſe muſt be rais'd by Steel, bitter Acrids, and volatile Salts.

The Celerity of the Pulſe is a ſign of hot Humours, and 'tis to be cur'd by a cold Regimen, and the Method for ſtopping of the Pulſe; a ſlow Pulſe muſt be cur'd by the Method for accelerating of the Pulſe.

The frequency of the Pulſe is ſtop'd by the ſame Method as the hot Cacochymia are cur'd; and the rarity of the Pulſe requires the Method which accelerates the Pulſe.

A vehement Pulſe muſt be cur'd by a cool Method to ſtop it; and a languid Pulſe muſt be cur'd by a Method which accelerates it.

If the Pulſe be too full, as in *Plethorics*, we muſt uſe ſome general Evacuations, as Bleeding, and Purging, and much Friction; Exerciſe and Sweating to evacuate the quantity of Humours, and a ſparing Diet; all which empties the Veſſels, and ſinks the diſtention of the Artery in a full Pulſe; and the Rarifaction of Humours muſt be check'd, as in the hot Cacochymia.

If the Pulſe be ſoft, the quantity of Humours is too ſmall; then we muſt uſe a plentiful Diet, and ſtop all Evacuations, and raiſe the Pulſe by the Method for accelerating of it.

If the ſoft Pulſe depends on the Obſtruction in the Lungs or Head, they muſt be cur'd by the ſame Method, as other Obſtructions in the Veſſels; if from Sizineſs, by the cold Regimen and cooler Methods; if from pituitous Humours, by the hot Regimen and hot Methods; in all Obſtructions the Viſcidity of Humours offends, and it indicates a diluting Method. We cannot know the ſizineſs of Humours by the Pulſe till it ſtops in the Artery in ſome Part, and then it produces a hard Pulſe.

Unequal Pulſes muſt be cur'd by removing all the Cauſes which compreſs,

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conſtringe, or obſtruct the circulatory Veſſels, or irritate the Heart, and Veſſels, and Spirits; if the Pulſes be too ſmall, ſlow and rare, we muſt accelerate the Pulſe; but if theſe Pulſes exceed, *viz.* the great, vehement, quick, frequent, exceed the contrary in their being mix'd with them; then we muſt uſe the cool Method to reduce the Pulſe to an equality; ſo the intermitting, deficient, undoſe, vermiculant Pulſes require a hot Method; but in the *dicroti*, vibrating, intercurrent, we muſt uſe the Method for ſtopping the Pulſe; the formicant and *myurus* muſt be cur'd, as weak Pulſes and ſmall.

If any diſorder of Spirits happen from the *Non-Naturals*, we muſt uſe the contrary; ſo what Diſeaſes, Heat, Labour, hot Diet, or hot Paſſions produce, the contrary will cure; and we know by the Numbers of the Pulſe, whether it was a hot or cold Cauſe, or Effect on the Spirits or Blood, which produces the Diſtemper; and if ſuch Cauſe continue long, it produces a putrid Fever, or ſome Cacochymia; all which we know by the Pulſe, and we either accelerate or ſtop it, as the Pulſe indicates.

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In Apoplexies, Palſies, and ſoporous Affections, the Spirits are oppreſs'd; and the Obſtruction on the Brain, Glands, muſt be remov'd, as in the Cure of ſizy Blood, in all other Inflammations; but when the Inflammation is over, the Palſy requires a hot Method for removing the Relics of the Obſtruction; and a cold Regimen muſt be alſo mix'd with the other, to drive the Humours into the circulating Veſſels again, and to help the weak Tone of a Part; and thereby to prevent the return of the Diſeaſe.

The diſorderly Motions of the Spirits in Paſſions, Convulſions, Watchings, *Deliria*, require a cool Method to Compoſe them, and to ſtop the violent Circulation of the Blood; but in old Diſeaſes, as in Melancholics, the Blood becomes grumous thro' Stagnation, which is occaſion'd by a convulſive Conſtriction on the Heart and circulatory Organs, as the Lungs and Arteries; and in this Caſe the Pulſe muſt be accelerated.

We may prevent Diſeaſes by the right uſe of the *Non-Naturals*, which preſerve the Pulſe in its healthful Numbers, and reduce it to its natural Number; when we obſerve that it declines by riſing or falling too much towards any Preter-na-

tural Number, whereby we know any Cacochymia or Diſeaſe.

That is the moſt healthful Diet, Air, Exerciſe, Paſſions, Sleep, Excretions, which very little raiſe or depreſs the Pulſe from its natural State; and if it exceeds, or is deficient, we muſt always Cure it by the contrary Regimen.

Then we know that a Perſon is well when the Pulſe is reduc'd to its natural Temper; and we may know how far a Diſtemper is from its Cure, by obſerving in how many Numbers the Pulſe either exceeds, or is deficient; and we know by the Pulſe how long we muſt continue a Medicine, *viz.* till it returns to its natural Temper; and we may, during the Method, conſtantly diſcern whether the Medicine has a proper Effect or no, by accelerating or ſtopping of the Pulſe; and by this mechanical Method we ſhall in time find out the due quantity of Alteratives of any particular Taſte neceſſary; for as any Diet or Taſte of Medicine alters the Humours, they will make a ſenſible Alteration in the Pulſe, and reduce it to its natural Temper; tho' we cannot diſcern the manner how Medicines alter the Humours, yet the Pulſe is a certain *Index*, and ſhews in what Degrees the Medicine

dicine operates by ſome particular Taſte; and this Method renders the Effects of Medicines certain and ſenſible, as well as the Taſte, in which is the chief Energy of a Medicine; and we ſhall not hereafter impute Cures to Chance, becauſe we have found out particular Simples, whoſe Taſtes we have found to produce a certain Effect, which is ſenſible to our Senſe of Feeling, as the Quality of the Medicine is to that of Taſting.

We know by the Pulſe what Cacochymia abounds, and conſequently what kind of Purges are proper; the Cholagogues, Melanogogues, Phlegmagogues, or Hydrogogues, which evacuate the four ſecretitious Humours; the quantity of the Evacuation we know by the greatneſs of the Diſeaſe, and by the Strength; both which we know by the Pulſe, the Part affected ſhews whence the Evacuation muſt be made.

The number and nature of the Pulſes ſhews us the vigour of the Strength, and the greatneſs of the Diſeaſe; and by reſpecting theſe two Things, *Hippocrates* directs us to Diet our Patients in Fevers; in the Vigour of the Fever we muſt uſe the moſt thin Diet; but if the Strength be weak, we Diet more plentifully in the

beginning of the Diſeaſe; and the Pulſe ſhews the declination of the Fit, when 'tis moſt proper to feed; the Pulſe ſhews the natural Temper, the receſs from that is the Diſeaſe; and by the Pulſe we find the dry and hot Conſtitutions which cannot bear Faſting; the Pulſe ſhews the particular Diſeaſe, and what Diet is neceſſary; ſo in Diairies from Heat of the Sun, Exerciſe, Surfeits, Faſting, Watching, Paſſion, ſuppreſſion of natural Excretions, the Pulſe being near 100 ſhews the Diſeaſe; and the exceeding Pulſe indicates a cool Regimen, as Water-Drinking, and cold Baths after Digeſtion, by Circulation, which is call'd the Coction of Humours.

The Pulſe ſhews thoſe Fevers which comes from great Fulneſs, Inflammation, or Obſtruction; and that in theſe Faſting is neceſſary, or a thin Diet; for the more high and frequent the Pulſe is, the hotter we are; and the more thin the Diet muſt be, and more cooling, and the Medicines muſt be more cool; and the ſlower and ſmaller, and more rare the Pulſe is, the hotter the Diet and Medicines muſt be.

A ſweet nutritive Diet alters the Pulſe very little, if it be not fermented; and

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if thereby the Pulſe be alter'd to more frequency, we uſe a cool Regimen; if to more rarity, a hot one. And we muſt always remove all external Cauſes which alter the Pulſe.

The vigour of the Pulſe ſhews the great ſtrength of Spirits to bear much Bleeding, and great Purging, and they muſt be proportion'd to the ſtrength; we know the greatneſs of a Diſeaſe by the exceſs or deficient Numbers of the Pulſe; and we muſt proportion the quantity of Alteratives to the greatneſs of the Diſeaſe.

By comparing the ſtrength and greatneſs of the Diſeaſe, we muſt judge of the Event of it; and ſince the Pulſe diſcovers both, we cannot Prognoſticate without it ſo well.

The animal and natural Faculties depend on the vital Faculties which cauſes the Circulations; if that be ſound, the reſt are ſo to.

We are certain that any Diet or Medicine is of a hot or cold Nature, as it raiſes or falls the Pulſe.

In hot Diſeaſes, we generally cool and dilute, as in Fevers; but ſometimes in them we give Wine and hot Medicines to ſupport the languid Spirits, and help

Secretions by Sweat or Urine; we know the beginning, increaſe, and declination in Fevers by the Pulſe, and that ſhews the proper time for Diet and Medicines.

Where divers Diſeaſes are mix'd, the Pulſe ſhews which is the Original, but great Symptoms will ſomething alter the Pulſe; ſo in a Fever with Looſneſs, the Pulſe is quick and frequent as in Fevers, but 'tis ſmall and weak by the Looſneſs; the Pulſe will demonſtrate how much each Symptom urges, and then ought to be reſpected.

We know what Topicks are to be apply'd outwardly by the Pulſe, if it be quick and frequent, the cool Topicks are moſt proper, and Narcotics; if the Pulſe be ſlow and rare, uſe Diſcutients, and hot Topics.

We know when Bleeding is proper by the Pulſe when 'tis high, full, ſtrong, quick, and very frequent.

We know that no Narcotics are proper in ſlow and rare Pulſes, becauſe they thicken the Humours, and ſtop the Motion; and if they be frequently given, they breed Cachexies.

It is a true ſaying, That Nature performs the Cure in Diſeaſes, and the Phyſician only aſſiſts her by his Medicines; by

by Nature we may understand the Circulation in which the Life of an Animal consists, 'tis that which does all that Nature can do; and the Business of a Physician is to regulate the Circulation, and by his Remedies to keep it in due Vigour, and not suffer it to run too fast or too slow; for when the Circulation runs extreamly fast, and the Strength becomes weak, the Patient dies with a formicant Pulse; when the Circulation runs extreamly slow, then the Patient dies by a vermiculant Pulse.

'Tis the Physician's Business to prevent both Extreams, which stop the Pulse.

1. We help the Preparation of our Chyle by Digestives, which must be of the hot Tastes in rare and slow Pulses; but of some of the cold Tastes, when the Pulse is quick and frequent.

2. The vitious quality of Humours must be always alter'd by contrary Tastes; and their several Tastes are known by the Cacochymia which depends on a Circulation too swift or too slow, and the Pulse is too frequent or rare.

3. The quantity of Humours is known by the Pulse, and in soft Pulses we must increase the quantity by a nutritive Diet

of ſweet Taſtes; but in full Pulſes we muſt diminiſh the quantity of Humours by a Phyſical Diet of Bitter, Salt, Acrid, acid Taſtes, and Bleeding and Purging.

4. The motion of Humours is accelerated in frequent Pulſes, and requires a cool Regimen; but in ſlow, rare Pulſes the Circulation is too ſlow, and requires the hot Regimen; as in obſtructions of the Nerves, as Palſy, or *Serum*, as in Dropſies, or Arteries ſtopt as in Polypus, Varices.

5. In hard Pulſes the ſizy Blood ſtops the Circulation, and then to alter its viſcid Conſiſtence we muſt cool and dilute it by cool and watry Taſtes; the undoſe Pulſe ſhews the thin Seroſity or watry Conſiſtence of Blood; and they muſt be inſpiſſated by hot Taſtes, becauſe the Pulſe is too ſlow in Cachexies; and when the Humours become ſizy, the Pulſe runs too frequent, except in the Part pain'd or obſtructed.

6. The Secretions require an undoſe Pulſe naturally, and if the Pulſe runs too violent, and the Circulation be feveriſh, the natural Secretions fails; or if the Pulſe be too weak and rare, the Secretion is deficient; in the firſt Caſe the cool Method will help the Secretions; in the laſt

the hot Taſtes are neceſſary, and the Pulſe muſt be kept great and undoſe; in general we uſe Medicines of the ſame Taſte, as the ſecreted Humours, to ſtimulate their Excretion; ſo Salts help the Excretion of the ſalt *Serum*; Bitters, that of the Choler thro' the Liver; Milk, the ſweet lacteal Lympha thro' the conglomerate Glands; and the thick vitriolic Blood thro' the Spleen, by *vitriolum Martis*; all the violent Secretions muſt be cur'd in the beginning by checking the violent Motion or Ebullition of Humours, and by Stiptics and Opiates we muſt ſtop the Flux.

7. The natural Mixture and *Craſis* of Humours muſt be reſtor'd by checking the Ebullition and high Pulſe by a cool Method; and we muſt evacuate all Ferments out of the Blood by Bleeding, Vomiting, Purging, Sweating; thus Fevers and Inflammations, and hot Catarrhs muſt be cur'd, and the Part on which a Defluxion falls muſt be ſtrengthen'd.

8. The Fuſion or Separation of the *Serum* from the viſcid Parts of the Blood muſt be prevented by accelerating of the Pulſe; and the Circulation by Steel and volatile Salts, and bitter Acrids; by theſe means we Cure all cold Catarrhs, and Dropſies.

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In all Defluxions, the *Glands* are firſt affected, as the Brain, the *Glands* in the Mouth and Neck, and Lungs next the Stomach, and Inteſtines, and Spleen, or the ſizy *Serum* ſticks in the Artery of the Habit of the Body.

9. In Curing of Tumors, we evacuate the quantity of the Cacochymia which produces it, and we muſt correct the quality by contrary Taſtes; the fulneſs of the Pulſe ſhews the quantity of Humours, and exceeding or deficient Pulſes the quality; and the quality of the Cacochymia indicates the ſame Alterative Taſtes, both as inward Medicines, and Topics outwardly.

10. All Pains are to be Cured by removing of the Cauſe, as Inflammations, Sizy Serum, Blood, hot Winds in Convulſions, and falſo Acids, or Vitriolic Humours; in Pains the Pulſe is very quick and frequent, therefore we muſt uſe Narcotics, and a cool Regimen to temper ſharp Humours and ſtop the Pulſe; and the Topics muſt alſo be cool and Narcotics, for all hot Humours do condenſe or thicken thin ſharp Humours; but when the Pulſe becomes rare, the Cacochymia is cold, and the Humours Crude and Thick, and they require diſcutient and

and hot Topics, as hot Humours require cold Topics.

11. The Laxity of Fibres in the Habit of the Body, or *Viscera*, is restored by Exercise, Friction, and cold Baths in Styptic or Salt Waters.

12. The Circulatory Organs are inflamed by hot Tumors, or Pained, or Corroded or compressed, or constringed; and where the Pulse is quick and frequent; a cool Method is necessary; but if slow, as in Palsies, Sleepy Diseases, Dropsies, a warm Method is most suitable; the Respiration is also useful for the Reflux of Blood, and the Causes which alter it must be removed, whether they be in Air-Vessels, Blood-Vessels or Nerves, and Muscles serving to Respiration.

13. The Faults of the Animal Spirits must be corrected when preternatural and regulated by the same Tastes as cure the Motion, Quantity, Quality, Consistence, or Secretion of the Blood, because the Spirits are generated out of the Blood; and have the same Faults as the Cacochymias both hot and cold; from a Choleric Cacochymia are bred acrid hot Spirits; from a Phlegmatic, watry, slimy Lympha, which oppresses the Spirits.

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Since by the Pulſe we know each Diſeaſe, and its Cacochymia, from thence we may take the Indications for Cure, and find out the Remedies by a contrary Taſte to the Cacochymias. And, ſince by the Pulſe we know the quantity of the Medicine, and the greatneſs of the Diſeaſe, and the ſtrength of the Patient in bearing of it, I cannot but affirm, that we may eſtabliſh our Practice on the *Ars-ſphugmica*, which will be very certain, ſafe and eaſie; and we ſhall hereby avoid all Diſputes about Notions in Practice, and depend wholly upon our feeling the Pulſe for knowing of a Diſeaſe, and Senſe of Taſting for the knowledge of the virtue of our Medicines. And tho' every Patient may by his Pulſe know the Diſeaſe, and what Method muſt cure it; yet none but an experienc'd Phyſician can direct which of the Specific Taſts is moſt ſuitable to the Conſtitution; in what Doſe it muſt be given, and in what Method we muſt uſe Evacuations, Alteratives and Topics, and how we muſt at the ſame time relieve all urgent Symptoms. I have, above, mention'd the *Galenick* Indications from the Humours and Cacochymias, and have endeavoured to adjuſt them to a ſwift or a ſlow Circulation and Pulſe; which Method of Phyſic,

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is both Mechanical and Philoſophical; tho' I believe the Mechanical is moſt eaſie and certain; for in this Method 'tis not neceſſary to aſſert more of the Humours, then as they are moved, too faſt, or too much rarified, or in too great quantity, or that the Humours are deficient, condenſed, too ſlowly moved; this is obvious and certain from the Pulſe, and by Experience we know, that a hot or cold Regimen will cure them. Infinite are the Opinions of *Galeniſts* and *Chymiſts* about the Nature of every Diſeaſe, they agree as little in their Phyſiology and Explication of Humours; there are as many different Hypotheſis as Phyſicians, therefore no Practice can be certain, which depends on Notions or Hypotheſes, or any of the Modern Philoſophy, but in the Circulation we find both our Life and Death, and Diſeaſes, which are ſeveral Irregularities which tend towards Dying, or ſtopping of the Circulation and Pulſe.

CHAP.

CHAP. III.

Containing the Method for Curing of the Pulſe, when it beats too high and faſt, and exceeds its natural Number in a Minute.

1. WE ſtop the Pulſe by frequent cold Bathing, and we become more cool all the Day after. I obſerve immediately after the Immerſion, the Pulſe to beat Ten Pulſes leſs in a Minute, and cold Epithemes on any part of the Body, will have a like effect as cold Baths; but in a lower Degree, as have alſo the Lotion of the Head, Feet and Hands, cold Air, cold Countries and cold Seaſons, all theſe ſtop the Pulſe and make it rarer, but they accidentally ſtrengthen the Pulſe, by ſtopping the Pores; and by detaining the hot Perſpirable, the cold Epithemes are uſually applied to the Heart, to the Pulſes, Forehead, Teſticles; all Liquors muſt be uſed cold, and the Cloaths muſt be

be cool and thin, the Head and Feet must be often washed; and by these means the Rarifaction of the Blood and Spirits will be checked, and the Humours condensed: Dr. *Harvey*, in his *Exertatio Anatomica* the III. has this Observation, *Hoc sum expertus a Suffocationis Asthmaticæ, summo discrimine, cucurbitis affixis & multa subita aqua gelida affusa Liberatos fuisse non paucos.*

2. In Rest, the Respiration is less and rarer, and the Motion of the Muscles cease; all which ordinarily promote the Reflux of Blood to the Heart, for these Reasons; During Rest the Pulse beats more slow, and because in Sleep we rest long, that also makes the Pulse less frequent.

3. In Sleep the Pulse is more rare, because Respiration is less in Sleep, as well as Muscular Motions, both of which help the Reflux of Blood, and thereby promote the Circulation.

4. By cold Diet we stop the Pulse in its frequency; so a Glass of fair Water in the Morning, and Fasting till Dinner, will sink some Pulses 20 Beats; the qualities in our Diet, which stop the Pulse are its Serosity, or watry Tasts; Hydroposia, Whey, Milk and Water, Toast and Water

ter for ordinary Drink, Steel Waters, Wood Drinks, Liquoriſh, Infuſion inſtead of Fermented Drinks. All the acid and *acerbe* Taſts in our Diet, ſtops the Pulſe, and all the Mucilaginous Taſts, as Borrage, Bugloſs and the Styptics, as Sloes, Medlars, Quinces, ſtop the Celerity of the Pulſe and Circulation externally; Unction with Oyl of Guinies or Omphacine.

5. The Paſſions of Fear and Sadneſs ſtop the pulſe, and thereby make the Blood thick like a Jelly; they divert the Spirits from the Heart, or elſe conſtringe it too much, and thereby create the apprehenſion of Swooning, or Faintineſs and cold Sweats, which are the effects of a Pulſe too weak and ſlow in the Vapors and Melancholic Perſons, who alſo breath too ſlow and rarely, which hinders the Reflux of Blood..

6. All Evacuations of Humours cool the Blood, and ſtop the Pulſe by abating the Ferment and Quantity of Humours; ſo Bleeding cools, and Purging moderately after Bleeding at the Noſe, and after the Meaſles, and after Lying-In, I have obſerved the Pulſe to be weak and rare, under 70; and we may obſerve, that after Sweating we are apt to be chill and very

very cool. *Galen* adviſes to uſe a tepid Bath, firſt to evacuate hot Fumes, and after a cold Bath to extinguiſh the Feveriſh Heat (τῷ ψυχρῷ σβέσαι τὸ καῦμα) then ſtop the Pores and Strengthen. He alſo in his Tenth Book of his *Methodus Medendi*, makes this curious Obſervation, That the Sweat which was excited by the tepid Bath, continues after they come out of the cold Bath, when that is uſed after the hot, which only prepares the Infirm for the cold; this Practice is very uſeful in Curing Diſeaſes, where we are obliged to promote and ſtop the Pulſe and Evacuation, as well as ſtop Fluxes.

The Medicines or Remedies whereby we abate the Pulſe, are either Evacuations or cool Alteratives, and Chirurgical or Dietetic Means.

1. The Evacuations by plentiful Bleeding, for when the Veins are empty the Blood urges the right Auricle leſs, and the Circulation is leſs frequent, and the *Aorta* being more empty, the preſſure by the injected Blood is leſs upon that which remained in the Artery.

2. Gentle Purgatives empty the Fermenting Maſs, which ſupplies new Chyle and Spirits, and thereby cools the Blood, and its Rarifactions; Wines are cooled, by

being drawn off their Lees, and a great Quantity of *Serum* being Purged off the Veſſels are leſs full, and the Circulation becomes more rare, for want of an irritating Quantity or Quality.

The Alteratives are the ſeveral cool Taſtes which affect the Solids, as well as Fluid Parts of Animals.

1. The Styptics which contract the Stomach and all the Membranous Parts by which they hinder their Motion; and the ſame Taſtes alſo condenſate the Blood and *Serum*. Stypticks alſo ſtraiten the Breath, and they thereby alſo hinder the Circulation; they alſo abate the Periſtaltick Motion in the Guts, and thereby retard the diſtribution of the Chyle into the Blood, whoſe continual Flood into the Veins promotes the Reflux of the Blood to the Heart, as appears by Dr. *Needham*'s Experiment, who blew into the Thoracic Duct, and thereby revived a Dead Animal. 'Tis not improbable but that Styptics act on the Membranes of the Arteries and Veins, in the Habit of the Body, and there ſtraiten the ſmall Canals in their paſſage thro' the Glands, becauſe they ſtop all Fluxes thro' them; and Styptics alſo ſtop Hæmorrhagies by Conſtriction of the

the Veſſels; and all Defluxions by Conſtriction of the Glandulous *Viſcera*.

2. The Mucilages defend the Membranes by their Slime from any Acrimony, which irritates them, as they alſo temper the Acrimony and Rarifaction of Humours, and thereby abate the Irritation on the right Auricle of the Heart; the Mucilages relax the Tone of the Solids outwardly, and if they can relax the Circulatory Organs, that may hinder their natural Contraction, by which the Circulation is promoted.

3. Acids act as Styptics on the Membranes, and they more powerfully coagulate and condenſe the Fluids; they fix the Salts and Oyl of the Blood, and thereby cool much; the Acids are beſt taken in Water, as Spirit of Sulphur is.

4. The Serous or Watry Liquors relax the Solid Parts by their Humidity, and inwardly they dilute the Blood and Spirits, and the Crudity or want of Fermented Air in the Bullule of Water, makes the Water heavier than any Animal Humour; and when the Maſs of Humours is mixed with it, they move more ſlowly, and the Rarifaction of Blood and Spirits is made leſs thereby.

Opiates, tho' hot in taſte, have a cooling effect by ſtopping the Pulſe, and all the Circulatory Organs in their natural Motion; Opiates produce a Delirium in the Spirits, by their *Volatile Salt* and *Venomous Fætor*, and thereby hinder the ordinary Flux into the Muſcles of the Heart and Reſpiration, and alſo into the Muſcular Fibres of the Stomach and Guts, and Limbs; whereby the Tone of all parts is relaxed, which uſually help the Circulation.

6. The uſe of hot Baths, hot Cloaths, much Exerciſe, which produce much Sweat, and thereby diſcuſs the Volatile Parts of the Blood, accidentally cools our Humours and Solid Parts, when in a hot Intemperies.

7. Quick-ſilver is obſerved to ſtop the Pulſe, and quick Motion of Humours, becauſe it produces Palſies and Stupors; and it alſo checks the Rarifaction and Putrifaction of the Humours, and Cures Quartans, as Authors affirm. All theſe Effects it produces by its Acerbity, which is evident in its Fumes; and by this Quality it coagulates Humours, as Sublimate does.

8. Faſting in a Morning reduces the Pulſe to a ſlower Motion and Rarity, when

when it beats too fast; all new Chyle causes a heat when it mixes with the Blood, which stimulates the Pulse; and all Fasting, or missing of a Meal, hinders the fulness of Chyle and *Serum*.

9. All Immoderate Evacuations by Bleeding, makes the Temperament cold, and they change the Colour of the Face; they alter the Habit of the Body, and they produce Dropsies, Orthopneas, Obstructions of the Liver, weakness of Stomach, Apoplexies, Palsies, all which are occasioned by a slow Circulation of Humours; when we Bleed, *ad animi deliquium*, we must observe the Pulse.

10. By Ligatures and Pericarpiums of the cool Tasts, as Styptics, Acids, Slimy crude Juices, we stop the return of the Venal Blood, and cool its Rarifaction in Agues. Cool Epithenes to the Heart, Temples, Stones, Pulses, Feet, chill the hot Spirits in the Nerves, when too much Rarified; and thereby they stop the violent Circulation in Fevers and Hemorrhagies. *Sanctorius* advises a Bladder of cold Water, or Snow, to the Stomach, in hot Pains, and a Sheet dipt in Vinegar, may be applied to the whole Body; in Hemorrhagies

we hold cold Iron, or Stones, in the Hands, and apply them to the Neck.

11. 'Tis obſerved, that the Tonic Motion of the Muſcles, retards the Courſe of the Blood, becauſe Varices are produced in the Legs by long ſtanding, and if we ſtretch out our Arms, the Pulſe will appear low and ſmall, becauſe the Arteries are compreſſed by the Tenſion of the Muſcles; and the ſame Pulſe appears in Convulſions by the compreſſion of the Tenſe Muſcles, 'tis only the alternate Motion of the Muſcles, which promotes the Circulation. Long Thinking occaſions our long ſtanding fix'd in the ſame Poſture, and theſe may be preſcribed as a peculiar ſort of Reſt, to ſtop the Motion of the Artery, and to retard the quick Reflux thro' the Veins.

12. The Artery which carries a Flux to any part may be compreſſed, and thereby the Pain may be Cured, and the Artery will ſhrink by any ſort of Burning, ſuch as is made with Moxa, or hot Irons.

13. If a Ligature be made on any External Part, and the Blood in it be cooled by the affuſion of cold Water, when the Ligature is looſed, the Blood will re-

return'd cool to the Heart, and 'tis apt to cauſe Fainting; but yet this Experiment may be tried in exceſſive Heats; and the waſhing the Head and Feet in the Morning, and the waſhing the Hands before and after Meats, according to our *Colledge* Cuſtom, has a like effect; by cooling the Blood in the extremities of the Body, the whole Maſs becomes more cool.

CHAP. IV.

Containing the Cure of the Pulse when it Beats too slow, and it is deficient in its natural Number of Pulses in a Minute.

1. EXERCISE quickens the Pulse, and Walking more than Riding; Friction has the same effect, the contraction of the Muscles forces the Blood towards the Heart.

2. Hot Air, and hot Baths raise the Pulse, by Rarifying the Blood and Spirits; hot Cloaths and Flannels next the Skin, warming Beds, hot Fires, hot Ointments, and hot Perukes, and Snuff do the same.

3. All hot Diet raises the Pulses, as all Fermented Liquors and Flesh Meats, Brandy Spirits, all actually hot Liquors, as Tea, Coffee, but Chocolat raises the Pulse 10 Beats in a Minute; Coffee and Tea less; the Diet of Acrids, Aromatics, Bitters, Fetids and Putrid Things, and the Salt Diet very much heat the Blood; Old Wines,

Wines, and they which taſte of Roſin, are hotteſt.

4. All the hot Paſſions of Anger, Joy, expand the Spirits, and give them a more vehement Motion; Study, Cares, very much heat the Spirits.

Watching heats by ſtopping the Perſpiration, and a long agitation of the Spirits rarifies them.

6. Excretions retained, as Stools, Urine, Blood, Sweat, Semen, heat the Body and raiſe the Pulſe; Bleeding moderate quantities by the Noſe, Uterus, Anus, removes ſome Obſtructions, abates the quantity which oppreſſes, and accidentally raiſes the Pulſe.

The Remedies which raiſe the Pulſe, are either the hot Alteratives, which either affect the Nervous Papillæ in the Stomach, or the Blood in its Reflux, or elſe they raiſe the Pulſe by ſtopping Evacuations.

1. The Acrids, as Creſſes, affect the Membranes of the Stomach as they do the Tongue, by their hot burning pungency, and they thereby rarifie the Humour, when it reaches the Blood Veſſels, the pungency ſtimulates the Membranes to a Contraction, by which the Circulation

tion is promoted, the pungency ſtimulates the Blood-Veſſels; and the Secretous by which Obſtructions are open'd, Acrids are in a low degree veſicatory, and they irritate the Pulſe by Pain and their Volatile Salt.

2. Cauſtic Taſtes irritate the Pulſe moſt, when applied outwardly, and they muſt have the ſame effect within; ſo Garlick or the Scarabæi being applied outwardly raiſe a Fever; and if they be uſed inwardly, they inflame, heat and corrode the Solid Parts. So Squill Medicines inwardly irritate the Pulſe by acting on the Membranes in the Stomach, and cauſing a conſtriction of them, by which the Blood is forced thro' the *Vena Porta* towards the Heart.

3. Aromatics heat by their agreeable Odor, and Oily Acrimony, which irritates the Pulſe by ſtimulating the Nerves and Membranes in the Mouth of the Stomach, where Opiates and other Fetids have alſo their effects.

4. Sweet Things offend Hyſterics and Hypochondriacs, by fermenting in their Stomachs; and for the ſame reaſon Honey is injurious to hot Conſtitutions, but agreeable to cold Stomachs.

5. All

5. All Bitters have a deturgent Quality, and do nauſeate the Stomach and offend the Spirit in its Papillæ, and when the Spirits in the Nerves of the Stomach are irritated, by conſent thoſe of the Heart are affected and irritated; ſo we find all the Body trembles at the taſte of a Nauſeous Thing.

6. All Odoriferous Medicines act on the Nerves in the Mouth of the Stomach; ſuch are Musk and Ambergrice, and Caſtor or Amber Fetids; and Camphir does the ſame, as well as Aſſa-Fœtida, Sulphur, Steel.

7. All Salts, Volatile and Lixivial, have a Burning Acrimony or Pungency, and an offenſive Fetor, which ſtimulates the Membranes, and offends the Spirits by their Fetor, as Chymical Oyls do by their ſtrong Fetor outwardly expand the Spirits, and irritate the Membranes when we apply them to the Noſe; ſo when they are taken inwardly they have the ſame effect on the Nerves in the Stomach, which they vellicate and expand the Spirits, whereby the Circulation is promoted by thoſe Smells and Taſtes, acting on the Solids and Spirits, before their Virtues can arrive in the Blood.

8. All

8. All Nauseous Tastes stimulate the Mouth of the Stomach, and they create the same *Nausea* there as in the Mouth, they promote and stimulate the Peristaltic Motion of the Intestines, which will accelerate the Motion of the Chyle, and its distribution; and the Chyle moving faster will hasten the Reflux of the Blood thro' the Axillary Veins to the Heart; and the Blood is forced from the Guts to the *Porta* and *Vena Cava*, by the frequent contraction of the Guts, and this will produce a Feverishness after great Fluxes and Purges.

9. Vomits work most by exciting the Peristaltic Motion; for by promoting that they move the Blood to a swifter Reflux thro' the *Cava*, which the Convulsive Motion of the Diaphragme and Stomach, very much help; thus after strong Vomits the Pulse is accidentally raised.

10. Sneesing promotes the Motion of the Blood, and excites the Pulse; for in a great Inspiration the Diaphragm is much depressed, and forces the return of the Blood thro' the *Vena Cava*.

Stretching and Yawning are natural Motions to help the Circulation when it becomes too slow.

Sneesing

Sneeſing is effectual and uſeful when we take Snuff, but it acts only on the Spirits to irritate them, when Snuff does not make us Sneeſe; and Sneeſing clears the Lungs and Noſe, and quickens a ſlow Circulation; the common dry Snuff, dries the Mucus in the Noſe, but if we uſe Primroſe-Roots with Niter and Sugar-Candy, this will not clog the Noſe, but cauſe Sneeſing and Blowing of the Noſe.

All Secretions, thro' other *Glands*, are promoted by ſome Acrimony in the Specifics. Hepatics are Bitter Acrids like the Bile, and ſtimulate the Secretory Veſſels of the Liver, as Bile does; and they muſt act as Sneeſing and Maſticatories do, if they ſtimulate the ends of the Secretory Ductus of the Liver, or other *Glands*. In the Guts, all Vomits and Purges have a ſtimulating Acrimony and Sweaters; and Diuretics act by a ſtimulatory Acrimony; ſo the old Smegmata act, outwardly applied, and Cantharides alſo ſtimulates the Urinary paſſages.

11. All actual hot Liquors rarifies the Blood and Spirits, which are in the Nerves and Veins of the Stomach, by which the Circulation is promoted; ſo hot Tea, Broths, Drinks, firſt heat the Stomach, and

and then the whole Body; and the first effect must be by promoting the Reflux of the Blood, and by Rarifying the Air in it, which will immediately drive the Pulse faster; applying outwardly a Young Creature, helps the Circulation as well as hot Oyls, as *Ung-nardinum*, *Opobalsamum*, *Tobacco*, raises the Pulse much as actual heat does; and we may use Salt, Bituminous, Sulphoreous, hot Baths, or tepid Baths, with Mustard-seed.

12. Blistering Plaisters raise the Pulse, and so do very hot Acrid Plaisters, or hot Aromatic Epithemes to the Pulses; and Cupping-Glasses with fire to the Heart, which excite its Motion, as hot Water will do; the Fire and Blisters insinuate hot Particles into the Blood, burning heats a part, and raises the Pulse as all things do which cause Pain.

13. Stopping the Pores by cold Baths accidentally heats, and so does the cold of the Winter, and cool Cloaths; extream Cold extinguishes the heat, over-chills and breeds Trembling and Stupors.

14. All Evacuations must be stop'd which sink the Pulses.

These following Observations about the Pulse, I will here place as Additions to the former Treatise.

I ob-

I obſerv'd, that the Pulſe was rais'd by drinking *Buxton* Waters at *Lichfield*; I have us'd them as we uſe *Bath* Waters warm'd; I find they have the ſame Virtue in cleanſing the Lungs in hectical Caſes, as the *Bath* Waters have; but they are to be preferr'd before them, becauſe they heat leſs; theſe Waters kept up the Pulſe in a lean Perſon to 90 Beats in a Morning, ſo that all *Bath* Waters evidently Heats us; but their chief Uſe is to dilute and cleanſe the ſalt and ſizy Humours. I preſcribe *Buxton* Waters every Morning one Quart warm'd to the Hectical, to Bleed once in a Month, Riding two Hours before Dinner: The *Cortex*, with *Diacodium*, upon extraordinary Heats, once in a Month; and three or four times in a Week cold Bathing, which ſtops the Night-Sweats, and cauſes Sleep. I have oft preſcrib'd the Water of *Buxton* from St. *Ann*'s-Well for Vomitings, want of Appetite, pains in the Stomach, conſumptive Coughs, ſcorbutic Itchings in old Perſons, Stone, Scurvy; and I can now upon certain Experience recommend it to be Drank for the ſame Caſes, as the Waters at *Bath* are us'd; and for Hiſterical, Aſthmatic, Gouty, and all Defluxions, and hot Tempers; 'tis more ſafe becauſe

it

it does not so much affect the Head, as *Bath* Waters does, which oft produces Giddiness, and a Stupor to all the Senses; and in many it has deprav'd the Memory, occasion'd Apoplexies, Lethargies, Hemorrhagies, and Rheumatisms; it has done much Injury to the Hysteric, and Hypochondriacal, and Asthmatic; and the Convulsive, if it be Drank very hot; the Bathing at *Buxton* is suitable to all hot Diseases, as well as the Drinking.

I have caus'd *Buxton* Water to be carry'd in Bottles forty Miles, and they may be Drank either Cold or Warm. This Notice I thought fit to give my Country-Men, that they might have the benefit of *Bath* Waters near Home.

I observ'd the Pulse of a thin Woman in the Cholick by eating Fruit 100 in a Minute; the Pain rais'd the Fever, but the Pulse sunk much after Bleeding.

The Pulse in a Cholick of the Stomach, which was occasion'd by the Obstruction of the Menses, beat 100 in a Minute; twice Bleeding reliev'd that Pain, which seem'd to me an Inflammation.

The Pulse in the pain of the Piles did beat 90 in a Minute.

A great Pain in the Head made the Pulse about 86 in a fat Woman; the Pulse in

in a rheumatic pain of the Back and Hips was 100.

The Pulſe in the Green-Sickneſs beats 90.

The Pulſe in the Neck was the ſame. Obſtructions in the lower Parts turn'd the Circulation more into the cephalic Arteries.

In *February* I obſerv'd a Quinſy attended with a breaking in the Throat, and ſometimes with a Scarlet Fever; the Pulſe was from 100 to 120, it was not hard, tho' the Blood was fizy; the Glandules were more inflam'd than the Muſcles, and the Pulſe was ſoft, languid, very frequent, Bleeding in the Neck reliev'd them, as well as Sweating, and Bliſters; but they were very Fainty upon Bleeding.

The Pulſe in a Looſneſs appear'd quick and frequent, by which I perceiv'd that a Fever was the original Diſeaſe; and not the Looſneſs which would have made the Pulſe ſmall, and ſlow, or undoſe; from this Obſervation I took this Rule, that where two Diſeaſes are mix'd, that is the cauſe of the other which has the moſt prevailing Pulſe.

I obſerv'd in the ordemutous Swelling of the Legs, the Pulſe beat 62 in a Minute.

I obſerv'd the Pulſe in a *Cholera* to be Feveriſh.

In Conſumptions the more frequent the Pulſe is, the more is the danger; the quicker the Pulſe is in the Dropſy, the more Thirſt, Cough, and leſs Appetite.

In long Diſeaſes the Pulſe grows leſs frequent, and becomes more weak and rare, through Viſcidity of Humours, and Conſumption of Spirits; then the Diſeaſe is uſually fatal, when the time of the Year increaſes the Pulſe of the Diſeaſe; ſo acute Diſeaſes in the Spring and Summer, and cold in the Winter are fatal.

If Diſeaſes from Obſtructions be not reliev'd by Evacuations, they are uſually fatal.

We know the Errors in Venery by the ſlow Pulſe, a little renders Nature more lightſom; if by too much, the Colour of the Face is ſqualid, more Pale, with a Laſſitude, and the Body becomes dry and hard.

PART III.

CHAP. I.

Concerning the Chineſe *Art of feeling the Pulſe, and their Practice of Phyſick grounded on the Knowledge of the Pulſe.*

I Think my ſelf oblig'd in this Treatiſe about the Art of feeling the Pulſe, to make ſome Remarks on the *Chineſe* Skill in that Art; and I will firſt prove that they have a real great Knowledge in that Practice, and that they may well build a Practice of Phyſick on their Art of feeling of the Pulſe; and I will endeavour to help the Reader in his Imitation of this Practice, by ſome Tables which will ſhew the Pulſe in each Climate, Age, Conſtitution, Diſeaſes; the natural dependence of each Diſeaſe on the Circula-

tion of the Humours, when it runs too fast or too slow; and I will add some Tables of Diet, and a Cabinet of Medicines according to their several Physical Tastes, by which the Circulation and Pulse may be reduc'd to their natural and healthful Motions and Temper.

1. I will prove by the following Relations, that the *Chinese* have found out the real Art of feeling the Pulse.

Samedo the *Portugueze* commends them for their Skill, and says, they never ask their Patients any Questions, they feel the Pulse in both Hands laid on a Pillow; and they observe their Motions a great while, and afterwards tell what the Patient aileth; and he farther saith, That the good and learn'd Physicians seldom fail; he also observes, that they lay the Breast bare, and that by the Pulse they can tell all Alterations in Diseases.

Farther *le Counte* says, That a *Chinese* Emperor writ about the Pulse 4292 Years ago, since which the *Chinese* have been Famous for Pulses; they pretend to have distinguish'd all manner of Pulses, and that all Diseases may be known by them, because every Disease alters the Blood or Spirits, and consequently the Pulse; they hold

hold the Pulſe ſometimes the Right, ſometimes the Left, and ſometimes both; they lay their four Fingers along the Artery, and when they have preſs'd the Artery ſtrongly, and by degrees, they raiſe them again by degrees, till the Blood recovers its Courſe; then they preſs the Arm again, and hold it a conſiderable time till they diſcern all the Diſorders of the Pulſe, and then they tell the Diſeaſe.

In the general Deſcription of *China* by the Embaſſy from the *Dutch Eaſt-India* Company, I find this Account; as to Phyſick and Chyrurgery they are Expert therein, and their Rules of Art differ not much from thoſe of the *European* Phyſicians; for firſt they feel the Pulſe like them, and are Skilful in diſcovering by the ſame the inward Diſtempers of the Body; in each Hand they take Notice of ſix diſtinct Beatings of the ſame, namely, three high, and three low; which, as they conceive, have ſome ſecret Coherences with certain Parts of the Body; as that of the firſt to the Heart, of the ſecond to the Liver, of the third to the Stomach, of the fourth to the Spleen, of the fifth to the Reins, *&c.* the Author has not nam'd the ſixth, but I ſuppoſe it is the Lungs (becauſe they alter the Pulſe much by an Inequality)

and farther, that they may with more certainty of Judgment deliver their Opinions, they are at leaſt half an Hour in feeling the ſick Perſon's Pulſe

I think it not difficult to underſtand this Account of ſix Pulſes.

If we by the Liver underſtand the Blood in ſanguine Tempers, which makes a moderate, ſtrong and full Pulſe, moderate in celerity and frequency; this is a moderate high Pulſe among the *Chineſe*, when the Pulſe runs a little above the healthful mediocrity of Pulſes.

The ſecond high Pulſe reſpects the Heart, by which we muſt underſtand the vibrating high Pulſe in choleric Conſtitutions, and ſuch Cacochymias.

The third high Pulſe muſt reſpect the Lungs and Glands, by which we muſt underſtand the ſalt *Serum* in Defluxions, Catarrhs, and all the ſcorbutic Cacochymias.

The 1ſt low Pulſe reſpects the Stomach, that is, the phlegmatic Humours, which are very eminently viſible in it.

The 2d low Pulſe reſpects the Spleen, by which we muſt underſtand the acid, thick, ſplenetick Blood.

The 3d low Pulſe reſpects the Reins, by which we muſt underſtand the watry *Serum*.

By

By the high Pulſes, we muſt underſtand the Pulſes which have exceeding Numbers; and by the low, thoſe which have deficient. 'Tis ridiculous to believe that the Pulſe can depend in its Alterations on the ſolid Parts of any *Viſcera*, but it does evidently alter by the Fluids; therefore 'tis obvious that the *Chineſe* reſpect the Fluids, which are ſecreted by thoſe Parts in feeling of the Pulſe; and if this be a fair Conjecture, I have probably accommodated the *Chineſe* and *Grecian* Art of feeling the Pulſe. Mr. *Wotton* quotes this from *Cleyer*.

The *Chineſe* divide the Body into three Regions, the firſt from the Head to the Diaphragm, the ſecond from thence to the Navel, containing Stomach, Spleen, Liver, Gall; and the third to the Feet, containing Bladder, Ureters, Reins and Guts; to theſe three Regions they aſſign three ſorts of Pulſes in each Hand.

Mr. *Wotton*, in his Reflexions on ancient and modern Learning, gives an Account of an ancient *Chineſe* Phyſick-Book, call'd *Nuy Kim*, which deſcribes the Production of our Bodies; and the Relation of the ſeveral Parts, with the five Elements, which I will endeavour to Explain, that I may vindicate the *Chineſe* way of

Practice, and find as much natural Phyloſophy in their Writings, as was in *Hippocrates*, in *Plato*'s and *Ariſtotle*'s Time, and their Anatomy was not more Exact than the *Chineſe*. In this Diſcourſe quoted from *Cleyer*, I find good Senſe, tho' expreſs'd in the *Aſiatic* way, whoſe Words are ſorts of Hieroglyphicks, as well as their Characters; and their Expreſſions are fitter for Poetry and Oratory, than Phyloſophy; the *Aſiatics* have a gay luxurious Imagination, but the *Europeans* excel in Reaſoning and Judgment, and clearneſs of Expreſſion.

'Tis neceſſary to give a ſhort Account of the *Chineſe* Phyloſophy, before I begin the Explication of this old Book.

In the beginning they ſay the World was produc'd out of a Univerſal Subſtance, which they call *Chaos* or *Vacuum*, and that they call *Li*; out of this aroſe an Air call'd *Kie*, which by Motion, Heat and Rarifaction, or Cold, Reſt and Condenſation, produc'd five Elements, Water in the North, Fire in the South, Wood in the Eaſt, Metal in the Weſt, and the Earth in the middle.

This Phyloſophy makes Matter eternal, as the *Greeks*; and that the World was produc'd by Chance, and govern'd by Fate;

Fate; and that at first all Things were produc'd out of Matter, and are reducible into the same, so that all Things are one; but the qualify'd Air is the Matter of Spirits. Since this Philosophy is like that of the *Epicureans*, our Western Philosophers do not exceed the *Chinese Literati*, who went as far as Reason could lead them in the Production of the World, 'tis only Revelation, which can discover the true Philosophy of the Creation, and the Nature of the God who made all Things.

Here follows the Quotation out of Nuy Kim, *which is put in a different Character.*

Out of the Eastern Region arises the Wind, out of the Wind Wood, or Plants, out of Wood Acidity.

The Explication.

In the Spring the Summer Monson arise, then the Wood and Plants grows, and shoot forth Leaves and Fruit, in which there is an Acidity.

From thence the Liver, from the Liver the Nerves, from them the Heart; the Liver is generated the third in order, and perfected the eighth.

The Liver is here taken for the Nourishment, bred from acid Fruits; in the Summer, on which the *Asiatics* feed; and thence

thence the Blood is prepar'd by the Liver; the Nerves have their Fluids from the Blood, generated by the Liver, and the Heart is mov'd by the Spirits.

Note, That by the Liver the *Chineſe* underſtand Blood, and not the Gall.

The Spirits of the Liver, as they relate to the Heaven, or Air, are Wind, as Wood in the Earth, as the Nerves in the Body, ſo is the Liver in the Limbs.

This is the Deſcription of the vital Spirit in the Blood, which is Air; and when this is communicated to the Limbs by the Nerves, it moves the Limbs.

Its Colour is Blue, and its Uſe and Action is to move the Nerves.

The Colour of the Face is deſcrib'd, and the Production of Animal Spirits is the chief uſe of the Digeſtion and Circulation of Humours.

The Eyes are the Windows of the Liver, its Taſte is Acid, its Paſſion or Affection is Anger.

We ſee all Diſeaſes in the Eyes, when the Liver or Blood is affected, the Taſte of the Blood made by the Liver is vitriolic Acid, the hot choleric Blood inclines to Anger.

Anger hurts the Liver, but Sorrow and Compaſſion conquers Anger; becauſe Sorrow is

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the Paſſion of the Lungs, and the Lungs are Enemies to the Liver.

Anger accelerates the Motion of the Blood, Sorrow and Compaſſion conquer Anger, as they are contrary Paſſions, they expel one another; the Lungs are evidently affected by Sorrow, as the Liver is by Anger; the Liver makes the Blood hot by its Choler, the Lungs cool it by inſpir'd Air.

Wind hurts the Nerves, but Drought the quality of the Lungs, conquers Wind; Acidity hurts the Nerves, but Acrimony, or that ſharp Taſte which is proper to the Lungs, conquers Acidity, as Metal conquers Wood.

Any Preter-natural Windineſs affects the Nerves with Convulſions; this Wind is perſpir'd thro' the Lungs from the Blood by Reſpiration.

Acidity hurts the Nerves by Convulſions, or by fixing the Spirits, the acrid Salt which is evident in the Limpha of the Lungs, is contrary to that Acidity, and corrects it.

The Deſign of the preceeding Diſcourſe is to explain the generation of the Blood by the Liver, and the Animal Spirits from it; and I muſt obſerve, that this old Author takes Notice of the Acid Taſte, as well

well as Acrid; ſo, tho' the Practice of Phyſick by the Pulſe be Mechanical, yet the *Chineſe* require ſome Knowledge of Anatomy, and the knowledge of the Taſtes of Animal Humours.

Out of the Southern Region ariſes Heat, out of Heat Fire, out of Fire Bitterneſs; from it the Heart is generated, thence the Blood out of Blood comes the Spleen, or Earth out of Fire

The Sun produces Heat and Fire, which produces the Bitterneſs in Plants and Animals, by digeſting their Juices; the motion of the Heart produces the Heat of an Animal, and the Blood is bred by the Heat; Heat burns the Blood, and like the burnt Earth the ſplenetic Juice is bred.

The Heart governs the Tongue, that which is Heat is the Heavens, Fire upon the Earth, Pulſation in the Body, is the Heart in the Members.

The Heat of the Heart is ſeen by the whiteneſs of the Tongue; the Heat in the Members proceed from the Heart.

Its Colour is Red, has the ſound of Laughing, its Viciſſitudes are Joy and Sorrow; the Tongue is its Window, its Taſte, Bitterneſs, its Paſſion, Joy; too much Joy hurts the Heart,

Heart, but Fear the Paſſion of the Reins, which are Enemies to the Heart, conquers Joy.

Blood colours the Face red, Joy, Laughing, Sorrows are Paſſions of the Heart; Heat gives a bitter Taſte to the Tongue, and its Colour ſhews the exceſſive Heat; we cure too much Joy, which injures the Heart by Fear, which affects the Reins; becauſe in Fear the Urine flows plentifully, as we find in Melancholics and Hyſterics, and by the watry Reins the Heart is cool'd, Loquacity depends on Heat.

Heat hurts the Spirits, but Cold conquers Heat; Bitterneſs hurts the Spirits, but the ſaltneſs of the Reins conquers Bitterneſs, or Water quenches Fire; the Heart is generated, the ſecond in Order, and is perfected the ſeventh.

Contraries Cure one another, as Cold, Heat, which too much rarifies the Spirits; Bitterneſs hurts the Spirits by too much Rarifaction of them, but the ſaltneſs of Urine conquers Bitterneſs.

There are many curious Remarks here that Bitterneſs is caus'd by Heat, that Bitterneſs affects the Heart, that Bitterneſs hurts the Spirits, and that it is cur'd by

by the Saltneſs of Urine; ſo *Coloquinda* abates the Bitterneſs, if infuſed in Urine; Choler produces Deliriums, and thereby hurts the Spirits; the Blood is heated by the Heart, and the Spleen-Juice is produced by Fire; the *Chineſe* cure Diſeaſes by Contraries, as the *Greeks* did, and both imputed Diſeaſes to the Taſtes of Humours.

The Heart is generated the Second in order, but they affirm, that the Reins were the firſt; by which may be underſtood, that the Salt Albumen in the Egg appears firſt, the Heart and Blood ſecond in order, the Liver the third, the Lungs the fourth, the Spleen the fifth, in order.

Out of the Middle Region ariſeth Moiſture, out of that Earth, out of the Earth Sweetneſs, from Sweetneſs cometh the Spleen, Fleſh from that, and the Lungs from Fleſh.

Rain cometh from the Middle Region, and Earthy Parts ſettle out of it, and from the Earth a ſweet Juice is prepared for Plants, from ſweet Blood the Spleen-Juice is prepared, by Aduſtion Fleſh is bred out of a ſweet Nutritious Juice, the Lungs are made of a Membranous Fleſh.

The Spleen governs the Mouth; that which is Moiſture in the Heavens, in Earth

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is Earth, Fleſh in the Body, and Spleen in the Members.

The Splenetics are great Spitters, and have Ulcers in the Gums. Water produces Earth, in the Body 'tis the Nutritious Juice, and that is called the *Spleen* in the Members.

Its Colour is Yellow, it has the ſound of Singing, its Window is the Mouth, its Taſte is Sweet, its Paſſion is much Thoughtfulneſs.

The Colour of the Splenetic Face is Yellowiſh, becauſe the Liver is obſtructed where the Spleen is ; the Splenetic have Singing in their Lungs ; the Spleen is known by the Mouth, there is a ſweet Bloody Taſte in the Mouth from bleeding Gums, the Splenetic are very Thoughtful.

Thoughtfulneſs hurts the Spleen, but Anger conquers Thoughtfulneſs, Moiſture hurts Fleſh, but Wind conquers Moiſture.

Thoughtfulneſs is injurious to the Splenetic ; but Anger is a contrary Paſſion, and helps the Stagnation of Blood in Obſtructions.

Sweetneſs hurts the Fleſh.

Too much Moiſture ſwells the Fleſh, but Wind or the Animal Spirits, help the Circulation of Humours ; the Splenetic

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are Lean thro' a crude ſweetneſs, in time the Acidity prevails.

In a word, Wood conquers Earth, or the Liver the Spleen.

As Wood grows out of the Earth, ſo the acid Splenetic Juice at laſt mixes with Choler, and this is the Atrabile, and then they Vomit Bitter and Sour.

The Remarks out of the former Deſcription of the Spleen, are, That the *Chineeſe* obſerve, that Plants have a ſweetneſs from the Earth, and there is a vitious ſweetneſs in Splenetics, which ferments into Wind; and all ſweet Things diſagree with the Splenetics, by Fermenting and turning Sour; this is the true Melancholic Juice, and when Choler is mixt, 'tis the Atrabilis; this Humour affects the Nerves with Wind, of which the Singing in the Ears is a ſign, or the Singing of it is a ſign of Delirium.

Out of the Weſtern Region, *ariſes Drought, thence comes Metals, from them come Sharpneſs, out of that are the Lungs, out of the Lungs come Skin and Hair, out of Skin and Hair come the Reins, the Lungs govern the Noſtrils; that which is Drought in the Heaven, or Air, is Metal*

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in the Earth; Hair and Skin in the Body, and Lungs in the Members.

Here the Effects of Drineſs is deſcribed, which appears in the Air when the Wind ſtands Weſt, and the ſame Drineſs is in Skin and Hair; and all Salts have a Drineſs, the Lungs have that ſharp Salt in their Lympha, and that is called the Lungs, and out of that is produced Skin and Hair; and the ſame ſharp Salt appears in the Kidneys, as well as Skin and Hair upon Sweating; Lungs in the Members is the Perſpiration of a Salt Lympha, the Motion of the Noſtrils alters in Dyſpnea's.

Its Colour is Whitiſh, has the ſound of Weeping, its Windows are the Noſtrils, its Taſte is Sharp, its Paſſions Sorrous.

The Colour of the Face is Whitiſh, they make the Noiſe in Weeping by ſobbing and ſighing in Sorrow, the Taſte of its Lympha is Salt and Sharp in its Defluxions.

Heat hurts the Skin and Hair, but the Cold of the Reins conquers Heat, Sharpneſs hurts the Skin and Hair, but Bitterneſs conquers Sharpneſs.

The Skin and Hair are over-dried by Heat, but the Watry Nutriment cools them, ſharp Humours Ulcerate the Skin,

but Bitter Medicines deterge and heal them.

The Reins signifie the Watry Humour which is Cold.

Out of the Northern Region, *arises Cold, out of Cold Water, thence Saltness, thence the Reins, thence the Marrow of the Bones, thence the Liver.*

Here the Effects of Cold are described, which appears in Cold Air and Rain, Saltness is dissolved in the Water, and it appears in the Urine also, the Marrow is condensed, as Oil is by Cold, and the Liver or Blood is cooled by Cold or condensed by it.

The Reins govern the Ears, that which is Cold in the Air, Water in the Earth, Bones in the Body, is Reins in the Members.

The Salt Humours makes a Defluxion on the Ears, and causes Deafness, as the Water causes Cold in the Air and Earth; so a Salt Rheum causes Cold in the Bones and Members.

Its Colour is Blackish, has the sound of Sobbing, its Windows are the Ears, its Taste is Saltness, its Passion is Fear.

The Colour of the Face is Blackish, the Tears which flow in Sobbing are Salt, the Excess of Salt Humours are known by

by Deafneſs, the Taſte of the Urine is Salt, and Fear accompanies Watry-Blood.

Cold hurts the Blood, but Drought conquers Cold; Saltneſs hurts the Blood, but Sweetneſs conquers Saltneſs.

Watry Humours make the Blood cool, but Drineſs conquers Cold, by evacuating of the *Serum*; here is the Cure of Saltneſs by Sweetneſs; ſo Infuſion of Liquoriſh or Milk cures the Saltneſs of Blood.

The *Aſiatics* have an obſcure, ſublime way of Expreſſion, and in deſcribing the ſeveral Cacochymias, they chiefly deſcribe the Parts which produces them, to which their 6 Pulſes relate.

The 3 high Pulſes of the Chineſe.

1. In Deſcription of the Liver, the Sanguine Temper is deſcribed, and the Spirits of the Liver or Blood move the Nerves, and make a full and great Pulſe.

2. In Deſcription of the Heart, the heat from whence Choler is produced, and its Bitterneſs is deſcribed; and this is the

Choleric Cacochymias, which has a high, vibrating, quick Pulſe.

3. In Deſcription of the Lungs, the Salt Rheum is deſcribed, and this muſt have an unequal Pulſe, as in all Defluxions on the Lungs.

The 3 low China *Pulſes.*

1. The Cold Watry Humour is deſcribed with the Reins, and this will have a ſoft, ſlow, rare Pulſe; under the Watry Humour, the *Chineſe* muſt comprehend the Phlegmatic Cacochymia, which is moſt evident in the conglomerate *Glands.*

2. The Splenetic Humour is deſcribed with a ſweetneſs at firſt, then it becomes Acid, and by a mixture with Choler, it makes the Atrabilis; this makes a high Pulſe, but the other a low Pulſe.

3. The Pulſe which relates to the Stomach, muſt be the Phlegmatic Pulſe, rare, ſlow, weak; or an oppreſſed Pulſe, from too much Meat, or corrupt Humours in the Stomach. This is high and low mix'd.

Theſe following Remarks I ſhall farther make on the *Chineſe* Art, by which we may diſcern their Skill.

1. That

1. That their Art is Older than the *Galenic*, as appears by the Old Book writ 4000 Years ago; beſides, the *Chineſe* might find out this Art by Experience, as well as the *Greeks*. Neither the *Greeks* nor *Chineſe* had formerly the true Anatomy or Philoſophy, by which the Pulſe is now explained. Experience is the only Foundation of this Art, the Notions are taken from Anatomy and Philoſophy, which were not the ſame in different Ages; the *Chineſe* have had the longeſt Experience, and probably have the moſt exact Knowledge of the Pulſe, and therefore have built their Practice on that Skill.

2. The *Chineſe* make their Pulſe to refer to the ſame Cacochymia's as the *Greeks*; and they deſcribe the Choleric by Bitterneſs, the Splenetic by crude Sweetneſs, the Salt Cacochymia by Saltneſs, the Sanguine by Windy Spirits and Acidity: This is the fermenting Temper of Humours.

3. The *Chineſe* obſerve the heat of Blood, and the coldneſs; the Drineſs in the ſalt Conſtitution, and the Moiſture in the Watry; hence it appears that in the Mechanical *Chineſe* Practice, ſome Anatomy of the Solids, and the Taſtes of the Fluids, is neceſſary; and as the *Greeks*

imputed Sanguification to the Liver, ſo the *Chineſe* do alſo.

4. The *Chineſe* cure by contrary Taſtes, for they, as I have Quoted above, ſay, Acrimony cures Acidity; Cold is cured by Heat, Acidity conquers Sweetneſs, Drineſs Conquers Wind; Wind, (or Spirits) conquers Moiſture, Bitterneſs conquert Sharpneſs, Sweetneſs conquers Saltneſs.

5. The *Chineſe* take half an Hour to feel the Pulſe, and in leſs time 'tis almoſt impoſſible to conſider the differences of the Pulſe, and the ſeveral Cauſes of its Alteration; the Pulſe of the Climate, the Pulſe of the Conſtitution, Age, Sex, time of the Year, Diet, Air, Exerciſe, Paſſions, Excretions, Obſtructions of them, Watching and Sleep; and then we muſt conſider all the Diſeaſes of the Blood and Spirits; and the *Chineſe* lay the Breaſt bare to obſerve the Skin, or Motion of the Breaſt in Reſpiration. This *Samedo* affirms. And beſides the Intimation given us by the Pulſe, we may conſider the heat in the Hand, the Habit of the Body, whether Plump or Lean? the Colour of the Face, Pale, Ruddy, Yellow, Blackiſh; which alſo ſhews the ſeveral Cacochymias; the Motion in the Eyes, ſhews the Heavineſs

vineſs, or Defluxions on the Head; the alteration of the Reſpiration, ſhews the Diſeaſes of the Breaſt; the *Ocdematous* Habit, defect in a Circulation; the Scurff or Puſtules in the Skin, the Salt Temper of Humours; the Liver obſtructed makes the Skin Yellow; the Spleen livid, the Reins or *Glands* Hydropical, and the Face is Pale, the Motion of the Body, and quick Speech, ſhews a hot Temper, the deficient, or weak and ſlow Speech and Motion, ſhew cold Tempers; Reſtleſsneſs ſhews Pains; by a *Ructus* we diſcern the diſorders of the Stomach. All theſe things muſt be conſidered, if we deſign to imitate the *Chineſe* Skill, whereby we deſign to find out a Diſeaſe, without being told of the Symptoms; by which we may procure great Reputation among the Vulgar, who among us expect that we ſhould diſcover all by the Urine, as the *Chineſe* do by the Pulſe; but why ſhould I not uſe all my Senſes, as Sight, Taſte, Smells, as well as my Feeling? theſe diſcover truly the Diſeaſes of the Solids, and the feeling of the Pulſe, the ſeveral Cacochymias produced by a quick or a ſlow Circulation. *Quacks* and *Emperics* are to be met with in all Parts of the World, ſuch Jugling Practicers are mentioned by

Father *le Counte*, who Prognosticates ridiculously; you were never troubled with the Head-ach, but with a Heaviness; you have lost your Appetite, but will recover in three Days; this Evening your Head will be free. The *Chinese* can tell how many Days, or Hours, a Sick Man can live, or how many Years a Man in Health can live. These are ridiculous Pretences, tho' mentioned by Sir *William Temple* and others. *Le Counte* says, they get themselves instructed secretly about their Patients Condition, before they visit him; and that they feign Distempers, which they afterwards Cure; these are only the Tricks of the Ignorant, and this must not prejudice the Skill of the true Artists and their Reputation; for such *Samedo* affirms there are in *China*. 'Tis a great mistake in the *Missionaries* not to Translate the *Chinese* Books about the Pulse, but to give their unskilful Account in general about the Pulses.

6. 'Tis probable that the *Chinese* want many of our *European* Diseases, as Gout, Stone, Dropsies, Rheumatisms, and that the equality of their Climate preserves their Health much; and that they are Sick only on the coming of their Rains, with Fevers and Looseness, twice in a

Year

Year, which they may eaſily know by their Pulſes; ſo in *Europe*, we have our Spring and our Autumnal Fevers, and theſe may be eaſily known by the Pulſe; and there is alſo an Epidemical Diſeaſe every Year, to both, if a Phyſicion has a due reſpect, he may ſoon know them by the Pulſe; and by a ſmall Experience, we may tell the Patient of all the Symptoms which attend his Diſeaſe.

Navarette ſays, the Practice of Phyſick is very Ancient in *China*, one of the firſt Five Emperors introduced it, his Books are preſerved to this Day, his Succeſſors have advanced this Faculty but little; Father *Coplet* is a violent Aſſerter of the *Chineſe* Phyſicians, and he is about Tranſlating their Books for the Improvement of *Europe*. *Navarrette* ſays, the *Chineſe* neither ſtudy nor know any thing of Philoſophy; and he makes the Phyſicians meer Emperics, of no Learning, nor have any Degrees; but he acknowledges that *Coplet* and others, very much valued their Phyſicians, and that many falſe Accounts are given of *China*. *Bartoli* in his Hiſtory of *China*, magnifies their Phyſicians, but *Gemelli* does not; by which it appears, that the *Miſſionaries* do not underſtand their Phyſick. *Gemelli* ſays, the Phyſicians carry

carry their Drugs with them, and they are paid for their Medicines, not for their Visit; their Empericks pretend to make Men immortal, and young again.

2. I will next shew how the *Chinese* ground their Art of Physick on the Knowledge of the Pulse.

Samedo tells us, That having felt the Pulse, they Compose their Medicines, and that the Physicians have always a Boy following of them, carrying a Cabinet with five Drawers, each of them being divided into forty Squares, furnish'd with Medicines.

The *Chinese* have divided their Pulses into the three High, which are the exceeding Pulses, and the three Low, which are the deficient Pulses; for the high they use the cold Regimen, and for the low the hot Regimen.

Fermandez says, They first forbid Eggs, Fish, Flesh, which is the hot Diet; but allow Rice-Broth, or Rice boil'd with Herbs, this is their cool Diet; some Diseases they cure by Fasting, and will not allow any thing but boil'd Water, or *Thea*, formerly call'd *Cha*, they drink all their Liquors hot.

When they prescribe a hot Diet, they give Goose Eggs, salted Fish, roasted Meats,

Meats, which *Fermandez* ſays, they give to thoſe who recovers. He ſays, They never Bleed, nor Purge, or give Gliſters; the Reaſon of which I gueſs, is, becauſe all their Diſeaſes are to be cur'd by Sweating, for which they uſe hot *Thea*; and *le counte* ſays, their Pills are Medicines to Sweat, to fortifie their Stomachs, ſuppreſs Vapors, but ſeldom Purge; but *Samedo* ſays, they purged a Father in the Meaſles, and that it was like to Kill him.

In hot Countries the Stomach is very weak, becauſe the Heat produces an exceſſive Perſpiration, this makes Cordials, Spices, and Digeſtives neceſſary; but in cold Countries, the Stomach is very good, and the Pulſe great and ſtrong, and hot *Theas*, Cordials, and hot Diet, are not ſo neceſſary.

The *Chineſe* great Cordial is *Genſem*, which taſtes ſweet and bitteriſh, with a ſmell of Musk, they give the quantity of Sixpence in a Decoction; this *Genſem* ſeems to me an artificial Thing, and may be a *Scorzonera* Root, ſteep'd in ſome infuſion of Musk; 'tis certainly of a Musk Taſte, and has the Virtue of it as a high Cordial.

The *chineſe* Diſeaſe ariſe chiefly from great Heat, which cauſes them to impute all their Diſeaſes to a corrupt Wind, for which they apply Cupping-Glaſſes on their Belly in Cholicks, and hot Needles or Cauteries to other Places for the Wind; and they apply a hot Iron to the Soles of the Feet for the Cholick, and they uſe Bathing in Rivers.

The Heat of the Climate diſpoſe the *Chineſe* to great Perſpiration, by which alone all Diſeaſes perſpire. *Bellinus* tells us, That ſix Pound is perſpir'd at *Naples* in one Day, and in *England* 'tis commonly about three Pound; therefore we muſt not cure our Diſeaſes by Diaphoretics, but by Bleeding, Purging, Diuretics, rather than Sudorifics. *Samedo* mentions five Drawers, with forty Squares in each Phyſician's Cabinet, which makes their Simples to amount to two Hundred. I have in imitation of this ſorted all our Medicines by their Taſtes, and have propos'd an *Engliſh* Cabinet of Medicines; but I have not confin'd my ſelf to *Engliſh* Simples, but choſe thoſe which are moſt eaſily procur'd among us; and it muſt be obſerv'd, that the *Chineſe* have their *Genſem* from *Tartary*; and ſince we have *Coffee* and *Thea*, and *Chocolate*, which are

part

part of our Diet from *India*, why ſhall we not have our Medicines thence, if they exceed ours in Virtue?

The Phyſicians themſelves in *China* are Apothecaries, and when they Viſit their Patients, they carry a Servant loaded with their Medicines, this *Navarette* reports. And he farther ſays, They know nothing of Potions; their greateſt Cure is a regular Diet, which is agreeable to *Galen*; the greateſt Medicine is Abſtinence, they uſe little *Rhubarb* in *China*, but more of the *China* Root; Purging is not ſo ſuitable to hot Countries as Sweating is.

The *Chineſe* eat Horſe-Fleſh, Aſſes, and Dogs-Fleſh, and drink warm *Thea* after them to help their Digeſtion.

The *Chineſe* drink their Rice. Wine hot, as well as all other Liquors.

3. I will next ſhew, how we muſt imitate the *China* Practice, and tell the Vulgar all their Diſeaſes, without asking them any Queſtions.

1. We muſt conſider the time of the Year, and what Diſeaſes happen then; ſo *Hippocrates* tells us, Madneſs, Melancholy, Epilepſies, Hemorrhagies, Quinſey, Hoarſneſs, Coughs, Puſtules, Boils, Pains, and

and Leproſies happen in the Spring. In the Summer, ſome of theſe continue, and burning Fevers, Tertians, Quartans, Vomitings, Diarrheas, Opthalmics, Ulceration of the Mouth, Pains of the Ears, and Puſtules in the Skin, ariſe.

In Autumn, many of the former continue, Quartans, Erratic Fevers, Spleen, Diſeaſes, Dropſies, Conſumptions, Strangury, Lientery, Dyſſentery Sciatica, Quinſy, Aſthmas, Iliac Paſſions, Epilepſies, Deliria.

Theſe are the Winter Diſeaſes, Pleuriſies, Inflammations of the Lungs, Catarrhs, Hoarſneſs, Coughs, Rheumatiſms, Pains in the Breaſt, Sides, Loyns, Head, Vertigo, Apoplexies, Lethargies; the Pulſe in theſe ſeveral times of the Year alters ſomething.

2. Conſider what Diſeaſes happen in each Age.

Theſe happen to Children when very Young, ſore Mouths, Vomitings, Coughs, Watching, Frights, Inflammations of the Navel, running of the Ears, Gripes, Red Gum; when Children breed Teeth, Itching of the Gums, Fevers, Convulſions, Diarrhea's.

As Children grow Older, Rickets, Aſthmas, Stones, round Worms, Aſcarides, Warts,

Warts, Stranguary, Satyriasis, Strume Boils, Ruptures, Small-Pox, Measles.

From 14, Young Men are subject to Spitting Blood, Consumptions, Sharp Fevers, Epilepsies, Hemorrhagies at the Nose, and many of the former Diseases.

In the middle Age, Asthmas, Pleurisies, Peripneumonia, Phrensies, Lethargies, Burning Fevers, long Diarrheas, Choleras, Dysenteris, Lienteries, Hemorrhoids.

Old Men have short Breaths, Catarrhs, Stranguaries, Pains in the Limbs, Lethargies, Vertigo, Apoplexies, Stone, Gout, vehement Itching, dulness of Senses, running of the Eyes, Deafness, Driness, Scales, ill Colours in the Skin.

3. Observe the different Seasons, and their Diseases; in wet Weather there are long Fevers, Looseness, Putrifactions, Epilepsies, Apoplexies, Quinseys.

In very dry Weather, Consumptions, Opthalmies, Rheumatisms, Gout, Strangury, Dysentery, and sharp Fevers, Plague; the South Wind which brings Rain, makes the Head dull, relaxes the Nerves, occasions Defluxions.

The North Wind is cold, and produces Defluxions, Coughs, Hoarseness, Pains, and binds the Body, causes Disury.

4. We

4. We must consider what Epidemical Disease reins every Season, Small-Pox, Measles, Intermitting-Fevers, Cholick, Jaundice, Rheumatism, Coughs, Agues.

5. We must consider the natural Pulse which belongs to each Climate, the most Temperate is in the 45 Degrees; all Degrees nearer the *Æquator* have exceeding Pulses, those nearer the Pole have deficient Pulses.

6. Consider what particular Constitution every Patient has, and what Number of Pulses in Health.

7. Consider how far the natural Pulse is alter'd by the present Times of the Year, Ages, Seasons of Weather, Sex; and by the Diet, Exercise, Passions, Retentions, Excretions, Sleep, Watching.

8. We must consider what Cacochymia tinctures the Blood, and alters the Blood and Spirits, or circulatory Organs, which we may know by the Pulses; and these are the Antecedent Causes of every Disease.

9. Consider whether the Pulse exceeds or is deficient, and what Diseases belong to the exceeding or deficient Pulses, and to the several Cacochymias.

10. By the Pulſe we know whether the Circulation and Secretions run too faſt, or too ſlow; and thereby we may gueſs at the Preter-natural State of the Blood and Spirits; but 'tis not poſſible to know all theſe Diſeaſes of the ſolid Parts by the Pulſe, nor thoſe of the Fluids, which are extravaſated. I can tell that any Perſon has a Pain by the Pulſe, but I cannot tell in what Part it falls by the Pulſe; therefore when we Prognoſticate, we muſt ſay there is a Pain in ſome Part from ſuch a Cacochymia; ſo in inflammatory Pains the Pulſe is as in other Inflammations, great, quick, frequent; in Pains from a ſalt Cacochymia the Pulſe is leſs, frequent, and quick, and the Fever leſs; theſe are ſcorbutic Pains.

In nervous Pains there is a Tenſion of the Nerves by a Convulſion, and the Pulſe is as in the *Atrabilis*, which produces Convulſions.

In the *Quartans*, the *oſteo copos* Pain is from the vitriolic Cacochymia, and the Pulſe is more rare than in ordinary Fevers.

In the heavy phlegmatic Pains the Pulſe is little accelerated, the Humours are not ſharp, but have a windy Rarifaction, and cauſe Pain by tenſion and fulneſs.

11. I will here endeavour to reduce all Diſeaſes to a quick or a ſlow Circulation, which will very much conduce to our better knowing of Diſeaſes, and the Cure of them by the Pulſe.

1. The Blood is ill prepar'd when the Circulation runs too high, or too low, above or under the natural moderate Motion; and when the Motion is unequal.

The Circulation runs too quick in Fevers, Pains, Defluxions, Inflammations, Vapors, Paſſions in *Deliria*, Hyſteric and hypochondriac Melancholy, in ſcorbutic Caſes, and Diſeaſes from Choler, ſalt *Serum*, or *Atrabilis*.

The Circulation is too ſlow in Dropſies, Cold, Cachexies, Fluxes, Palſies, Lethargies, and all Diſeaſes from the phlegmatic, watry, or crude *Acerbe* Cacochymias.

The motion of the Blood is unequal in Obſtruction or Compreſſions on the circulatory Organs, in a Polypus, Intermitting Pulſe, Aſthma, Dropſie of the Lungs, Convulſions.

All the motion of our Humours are known by the Pulſe, according to *Bellinus*, *Neceſſario a motu ſanguinis vitium Pulſus*, therefore by that we may eaſily know that

that the Blood moves too fast in exceeding Pulses, too slow in the deficient; very strongly, weakly, too frequent, or too rarely.

The great Heat, Rarifaction or Condensation, and Coldness, are from a Circulation too quick or too slow.

2. The quantity of Humours is encreas'd by a moderate Circulation, such as is in sanguine Constitutions; when the Pulse runs betwixt 70 and 75, the quantity of Humours decreases in the Choleric, where the Blood moves too fast; and the farther the Pulse recedes from the Temperate, the less is the Flesh, and quantity of *Succus Nutritius.*

In an exceedingquantity of Blood (by which I understand the Chyle, Serum, viscid, cake, and secretious Humours, which are all mix'd, and contain'd in the Vessels) the Pulse is oppress'd, in a moderate quantity, the Pulse is full and great; in a defect of Humours the Pulse is small, soft and empty.

The Pulse moves slowly in the Fat, and more swiftly in the thin and lean Habits, Hunger, Thirst, Fasting, Exercise, Study; all the hot Diet, and hot Regimen and Evacuation by Stool, Urine, Sweat, Bleeding, empty the Veins.

A full temperate Diet, ſuch as Milk, ſweet Wines, gentle Exerciſe, ſoft Friction, tepid Baths, ſtopping Evacuations, much Sleep and Reſt, and cold Baths, fill the Veins.

3. The Blood is vitiated in its Quality by the hot Cacochymias, ſuch are the bitterneſs, ſaltneſs and vitriolic Acidity, all which are produc'd by a quick Circulation. In the cold Cacochymias, the Blood moves too ſlowly, as in the ſweet, ſlimy Blood, in which the lacteal Lympha abounds; in the acid Slimy, the vitriolic taſte of the Blood mixes with the lacteal Lympha; in the ſeroſe, thin Bloods, the Serum or Water abounds.

4. The Blood is vitiated in its Conſiſtence, when it is too viſcid, or too thin; and viſcid Humours are bred from a high and exceeding quick Circulation, or for want of a vigorous Circulation; from the number of Pulſes 75 to 90, the Viſcidity or Sizineſs encreaſes by Heat, and a frequent Circulation from 70 to 60, the gelatinous Viſcidity encreaſes through want of a vigorous Motion to attenuate it.

The Blood wants Viſcidity, and its Fibres are diſſolv'd in peſtilential Fevers, and the Small-Pox and Scurvy, ſome Hemorrha-

morrhagies; and in these the Pulse is small, quick, frequent, and weak.

In the inspissated Sizineſs we use a cool Regimen, in the grumous Viscidity a hot Regimen, and hot Medicines to accelerate the Motion.

5. The Secretions are vitiated through want of a due Velocity in the Circulation, or by the Obstruction of the *Glands*, by the thick Humours: If the Blood moves too fast, the Secretions exceed as in *Choleras*, *Diarrheas*, *Diabetes*, &c. and then the Pulse becomes, after some continuance, slow, weak, and more rare; but at first 'tis great and quick, as in Fevers, and strong, undose, in the beginning of the Flux: If the Perspiration be stop'd in healthful Blood, it makes a *Plethora*, and a great Heat, and quick Circulation, as in all Obstructions of the natural Secretions; in hot Tempers, if the Perspiration be stop'd, a putrid Fever, Inflammation, or Defluxion arises: If the Perspiration be too much, a Sincope will happen, and a Consumption, and the Pulse will become slow and rare, and that slow Circulation dispose to Cachexies.

6. The circulating Humours may be extravasated, if mov'd too fast, as in Hemorrhagies, and Ruptures of the Vessels;

or else they pass the *Glands* like a Defluxion, or else by Stagnation they corrode their Vessels in empuemas Wounds, Ulcers, Contusions, Aneurisms; in all these Cases the Humours are produc'd by a quick Circulation; but in Dropsies the fulness of Humours distends, and breaks the *Lymphatics*, and before the Rupture the slow Circulation is the occasion of the Stagnation of Humours.

7. The Ebullition ζεσις or ζυμωσις of Humours has always a feverish, quick Circulation, and the Pulse is great, quick and frequent; but the several Tipes of the Fevers depend on the Cacochymia, which vitiates the Blood; the Ebullition depends on a Ferment, which alters the *Crasis* of the Blood to a turbid State, and the greatest confusion or separation of Parts produces a Putrifaction; the Milk drove from the Breasts is the Ferment, in a Milk Fever, the suppression of the *Lochia* produces the febris *Purpurata*; all inward Abscesses produce a Hectic, a suppression of seminal Lympha produces the *febris alba*; the stoppage of Perspiration produces a catarrhal Fever, and Ephemeras and Defluxions, as Coughs, Asthma, Gout, from the crude Chyle in the Blood a *Quotidian*; if the Blood be tinctur'd with Cho-

ler a *Tertian*, if with vitriolic Acid the Fever is a *Quartan*; in a malignant Fever the Animal Spirits are oppreſs'd by a viſcid Blood and Chyle; in the Itch and Leproſy, Hydrophobia, the Blood is putrify'd by an external Poiſon inſinuated thro' the Skin; the peſtilential Air occaſions Fevers by a *Fætor*, which infects our Humours. In all theſe Caſes the Mixture and natural Ebullition of the Blood is alter'd by a corrupt Ferment which rarifies the Blood and Spirits, and accelerates the Pulſe and Circulation, which makes the Pulſe quick.

In all *Effervescencies* of Humours by external Cauſes, as Fire, Sun, Exerciſe, hot Baths; the Blood moves too faſt.

8. The *Craſis* of the Blood is diſſolv'd by Fuſion, when the Serum ſeparates from the viſcid Cake for want of a natural Velocity in the Circulation; this happens when it is ſtop'd too long by external Cold, and in Cachexies, Dropſies, Cold, Catarrhs, old Gouts, cold Tempers, old Age; in all theſe the Pulſe is too ſlow, and a Circulation too ſlow depraves the Secretions, as well as when 'tis too quick.

9. The Blood is deprav'd by its mixture with ill Chyle; if it be Bitter, Salt, or

Vitriolic, the Circulation and Pulse is too quick; if the Chyle be Slimy, Watery, or *Acerbe*, the Pulse and Circulation runs slower after Eating; if the Chyle be of a sweet Taste, 'tis well prepar'd, and the Pulse and Circulation runs moderately.

The Ferment of the Stomach digests the Chyle too much into a nidorose State, when 'tis tinctur'd with Choler, salt *Serum*, or a vitriolic Humour, and then the Pulse and Circulation runs too high, and frequent; but if the Ferment be Slimy, Watery, or *Acerbe*, the Circulation runs too low, and the Digestion is crude, or too low, like Immaturity in Fruits; in the former Case there is a Fever, in this a Coldness and Heaviness in the Stomach; in the Nidor of the Stomach there are hot Winds, in the cold Stomach cold Winds. All our Winds must differ according to the Humour, which is rarify'd into Wind. The Pulse will shew the Cacochymia which affects the Stomach; the hot by the exceeding, and the cold Cacochymias by the deficient Pulses, which will always shew the crudity of Digestion; acrid Salts, or bitter and fætid Chyle, will irritate the Organs of Circulation much.

The

The quantity of the Chyle makes a *Plethora*, and a full Pulſe, the deficiency of it a ſoft Pulſe.

The fizineſs of Chyle depends on an exceeding Pulſe, the crudity and mucilaginous Gummoſity on a deficient Pulſe.

The motion of the Chyle is obſtructed by a ſizy Viſcidity in exceeding Pulſes, or by a cool Mucilage, when the Pulſe is deficient; the Inſpiration and Periſtaltick Motion alter with the Pulſe and Circulation.

The Chyle is preter-naturally evacuated by Stools, Urine, Salivation, *Fluor albus*, Sweating, Coughing; and this alters the Pulſe as the Evacuations of the Blood do.

The qualities of the Chyle are alter'd by the ſeveral Cacochymias.

The Chyle is oft mix'd with Bile, ſalt *Serum*, the *Atrabilis*, or the lacteal Lympha, much Water, or Acerbity.

The Chyle mixes not well with the Blood, if it circulates too faſt, as in Fevers, nor if it circulates too ſlow, as in Cachexies.

We know when the Relicks of the Chyle which are not ſanguify'd are not excreted, or perſpir'd by the exceeding Pulſes, which perſpires and evaporates all the old Nutriment next Day.

Tho'

Tho' the Chyle move out of the Circle of the Blood, yet since it is produc'd by a Ferment, deriv'd from the Blood, it will have the same State as the Blood, and that may be discern'd by the Pulse.

I have reduc'd all the Faults or Diseases of the Blood to a Circulation running too fast, or too slow; and to the same I may refer the preter-natural State of the Animal Spirits.

1. The Spirits are vitiated by the cold Cacochymias, so in soporous Affections they are watry and crude, and slimy; in these the Circulation moves slowly, and the Pulse weak and rare.

2. The Spirits are vitiated by hot Fumes, or hot Winds in the *Atrabilis*, and *Deliriums*; or by Saltness in running Pains, or by Bitterness in *Deliriums*, and Head-Achs, and Watchings, in Passions, and *Manias*; the Spirits are too volatile, or over-rarify'd, and then the Pulse is too frequent, great and vibrating.

3. The consistence of the Lympha of the Nerves is too viscid in Palsies, Apoplexies, Lethargies; and then the Pulse is the same as in fizy Blood, very exceeding; the *Lympha nervosa* is too thin in Heaviness, cold Catarrhs, and Dropsies of the Head.

4. The

4. The quantity of the Spirits exceeds in ſtrong Pulſes, they are defective in weak Pulſes; and weak Circulation after great Fluxes, Labours, in Conſumptions and crude Blood.

5. The motion of the Spirits is vitiated when they flow violently into a Part, in Inflations of the Guts, Membranes, *Uterus*, Tendons, *Catalepſis*, Stiffneſs; and Numbneſs is occaſion'd by the compreſſion of a Nerve; in the *Atrabilis*, or ſizy Blood, ſuch convulſive Winds are produced, and the natural and mechanical motion of the Spirits depends on the Pulſation in the Brain, by which the Nerves are compreſs'd.

The natural propulſion of the Spirits is obſtructed in Palſies, Syncopes, which make the Pulſe rare and weak, becauſe the undulation of the Spirits is hinder'd outwardly; and this is neceſſary to all Animal Motions, as well as the Circulation.

The undulation of the Spirits towards the Brain produces all our Senſations; and 'tis vitiated by the Obſtructions of the Nerves in Blindneſs, and Deafneſs, want of Feeling; theſe depend not on the Circulation and Pulſe, and cannot be known by it, but the Cacochymias or antecedent Cauſes may be known by the Pulſe.

An

An easie undulation of Spirits produces Pleasure, an ungrateful Pain.

The motions of the Spirits is Tumultuous and Convulsive, when the Spirits are agitated by acrid, volatile Particles, which flow from the Blood with the *Serum* into the Nerves; these produce Giddiness in the Brain, and Convulsions, by irritating of the Nerves.

The inordinate irregular Motions of the Spirits produces incoherent *Ideas*; this Motion is caus'd by the hot, windy Cacochymias, by hot Passions, or choleric and melancholic Fevers, and is known by exceeding Pulses; the Vigiliæ depend on an over-rarify'd Spirit, as well as a *Mania*, and Dreams depend on a great agitation of Spirits.

When much Blood is transferr'd to the Head, the Brain-Glands are oppress'd, and Efflux of Spirits is hinder'd, and the Nerves oppress'd as in Apoplexies.

Any agitation of the Spirits in any external Part is communicated to the whole nervous Fluid, and then Convulsions begin in some external Part.

6. If the Spirits are vitiated in their qualities by the several Cacochymias, they produce different Diseases.

1. The

1. The *Atrabilis*, by a very great Heat produces the hysteric and hypochondriac Winds and Convulsions.

2. The salt Cacochymia produces the scorbutic wandring Pains.

3. The acrid Bile produces the Phrentic and *Mania*.

4. A seminal Fœtor is mix'd with the Spirits in the *melancholia Virginum*.

5. A fermented Spirit is mix'd with the Animal Spirits in Ebriety.

6. Dark Fumes are mix'd with the Spirits from melancholic, putrid Blood, suppres's'd in the obstruction of the Piles, and Menstrua.

7. An extraneous Ferment affects the Spirits in the hydrophobia Plague, and malignant Fevers and Poisons, by a volatile corrosive Salt, occasions *Deliriums* or Sleep, or great Evacuations, and corrode.

8. These Diseases of the Brain disturb the Motion, or hinder Influx or Undulation of the Spirits, Inflammations, Schirrus, Polypus, Imposthumes, Worms, Fractures, Concussions, Pains, Ulcers, depressions of the Skull, Dropsies.

9. These external Causes dissipate the Spirits, Labour, hot Baths, hot Air, Passions,

ſions, or elſe they rarifie them too much; and theſe condenſe them, Grief, Sadneſs, and acid watery and ſlimy Diet.

10. The Spirits are encreas'd by a plentiful Diet, Joy, Reſt, Sleep, fermented Liquors, Aromatics; in ſerene cool Air the Spirits are more Elaſtic, in cloudy and rainy Weather the Globuli of the Spirits are larger, and unfit for Motion; or the Glandules of the Brain are too much relax'd, and receive an impure *Serum* from the Blood; South Winds, and Fenny Habitations have the ſame Effects.

In a weak Tone of the Brain, and moiſt Tempers, the Lympha abounds too much.

Since the Animal Spirits, are the immediate Cauſes of the Pulſe, all its Diſorders, diſeas'd States, Motions and Qualities will be diſcern'd by the Pulſe; and the Circulation will be alter'd by thoſe Diſeaſes, or at leaſt all the Diſeaſes of the Bloods, Circulation will be communicated to the Spirits.

All Diſeaſes alter, and hinder the Animal Actions; and ſince they depend on the Circulation (for when that ſtops, all Actions ceaſe) if we preſerve the Circulation, or cure its Exceſſes or Defects, we re-

reſtore all the Animal Actions, and cure all Diſeaſes in the Blood and Spirits, which are the antecedent Cauſes of all Diſeaſes, as is above deſcrib'd.

We not only diſcern by the Pulſe the ſeveral ill States of the Blood and Spirits; but the Alterations of the circulatory Organs, which make intermitting or unequal irregular Pulſes.

1. The Motion of the Spirits is obſtructed by Tumors which compreſs the Nerves, or by Pains, Convulſions, which conſtringe the Nerves; ſo the Nerves are compreſſed in Apoplexies, Palſies, ſleepy Diſeaſes, or conſtringed in Epilepſies and Pains.

2. The Muſcles of the Heart and their Motions, are alter'd by Tumors, Inflammations, Fat, Schirrus, Dropſies of the Breaſt, Empyema, Wounds, Ulcers, Worms, Palſie, Convulſions, Atrophy, weak Tone, theſe oppreſs and ſtop the Motion, or irritate ſome Palpitation, or relax and weaken the Fibres.

3. The Canals of the Circulation are obſtructed by a Polypus, Varices, Stony, or bony Concretions in the Artery; or the Veſſels may be contuſed, broke, as in Aneuriſms, or diſtended, coroded, conſtringed, compreſſed.

4. The

4. The Respiration promotes the Reflux of the Blood; and when Diseases affect the Lungs, the Pulse is soft and unequal, or intermits, and the Circulation goes slowly, the Lungs may be affected in their Air-Vessels, Blood-Vessels, Muscles, Nerves, or compressed by Tumors.

5. The Habit of the Body is lax and defective in its natural Tone and Spring, which occasions the Blood to stop; and by Stagnation in the Extremities they swell, because the Muscles and Membranes do not sufficiently compress the Vessels, as oft as the Artery propels them, and thereby promote the Reflux of the Blood.

The Method of Cure by the Pulse, more particularly describ'd.

Our Health consists in the strength of the Animal Actions, and Diseases are alterations of those Actions; and whatsoever alters those Actions is the Cause of the Disease.

The Circulation is the Original of all the Animal Actions in Health; as that is alter'd so are the Actions, and as we restore the Circulation, we thereby help the Actions.

The

The Actions of the Animal Spirits depends on the Circulation of the Blood, if that move fast, our Passions are furious, our Motions are precipitate, and our Judgments rash, and the Imagination is delirous; but if the Blood move too slow, our Senses are dull, the Imagination slow, the Judgment and Memory stupid and slow, and the Motions of the Body are sluggish and grave.

I have above shewn, That the Digestion alters with the hot or cold Cacochymias, and consequently with the Circulation; so that the natural and animal Actions depend on the Vital, that is, on the Circulation.

The distribution of the Chyle depends much on the Respiration, and that on the Pulse; all muscular Motion depends on the animal Spirits, as they move down to the Muscles, and Sensation on their reflux; 'tis the animal Humours which alter the Actions, and they are the antecedent cause of Diseases, as they are deprav'd by a high, or a slow Circulation.

In the best State of Health the Blood moves moderately, the Heat is moderate, and the Secretions are well perform'd; the *Indicatio preservatoria* is to make such use of the *Non-Naturals*, as will keep the

Pulſe and Circulation in a regular, moderate Motion; and to prevent or remove thoſe Cauſes which in time would alter the Blood and Spirits, and thereby alter the Circulation and Pulſe.

Since all Diſeaſes may be reduc'd to an exceſſive quick, or too ſlow a Circulation, the cure of Diſeaſes is to reſtore the Pulſe to its natural State; and this is the *Indicatio Curatoria*, and there will be but two Methods of Cure in all Diſeaſes, *viz.* to ſtop the ſwift Circulation in Fevers, Pains, Inflammations, Obſtructions from ſizy Humours, Pleuriſies, Peripneumonias, Rheumatiſms, Hemorrhagies, Choleras, Putredos, Laſſitude, Ephemeras, Abſceſſes, Convulſions, Deliria, Vertigo, Epilepſies, Palpitations, Cardialgias, Gout, Aſthmas, Sciatica, Melancholia Hypochondriaca, and hyſteric Vapors; and all hot Paſſions, hot Tumors, Eryſipelas, Herpes, Leproſie, hot Winds.

The other Method of Cure requires the accelerating of the Pulſe, as in Syncope, Dropſie, Cachexies, weak Digeſtion, pale Colours, Weakneſs, long Fluxes, cold Tumours, Cedematous, Schirous, Watry, Rigors, Tremors, Torpors, Stupors, immoderate Evacuations by Stool, Urine, Sweat, Hemorrhagies, Diabetes, Gonorrhea,

rhea, *fluor Albus*, Vomiting, Lientery, Diarrhæa, *fluxus Hepaticus*, *Menſtruorum*, and in ſoft, cold, Effeminate Skins, Comas. In the quick Pulſe we cure by ſtoping; in the ſlow, by accelerating: And this is curing by Contraries, as well as in the common Method of Cure; the Pulſe gives the general Indication and the principal. We conſider the Humours as they retard or quicken the Pulſe, and in the evacuating or altering of them, we are directed by the Pulſe, as that ſhews the degree of the Diſeaſe, and the ſtrength to bear it.

If we cure the ſeveral degrees or exceſſes of the Pulſe and Circulation, the Humours will be rightly cured; and it will be the ſame thing, whether the Indications are taken from the Humours or the Pulſe, but the laſt is moſt evident and certain.

The conſideration of the Temperament, Age, Sex, time of the Year, Strength, Cuſtoms, ſhew whether we may uſe a ſtronger or a weaker Medicine.

The Nature of the Part, and external Cauſes co-indicate, or direct us about the uſe of the Remedy, in greater quantity and ſtrength; but 'tis the Pulſe alone that indicates the Method of Cure, and

the general quality or taſte of the Medicine, which will alter the Pulſe and Circulation to a contrary ſtate; the Situation and Figure of the Part, indicates the manner of the Cure; therefore we may ſtill take Coindications from the Part affected, its Subſtance, Conformation, Site, Figure, Actions, Excretions and other Qualities, and we muſt always preſerve the natural ſtate of our Pulſe and Humours by the like; and reſtore the preternatural by Contraries, for till that is procured, the Diſeaſe is not cur'd; the Pulſe will ſhew the Cacochymia in each Part, and the Rarifaction of the Animal Spirit, the hot or cold Intemperies of any Part (as the Old Phyſicians call it) without matter.

The greatneſs of a Diſeaſe is known by the Pulſes receſs from its natural moderate Numbers, and by the injury the vital Faculty receives by it.

The greatneſs of the Strength is known by the Strength, Greatneſs and natural Numbers of the Pulſe; if the Pulſe be very diſtant from the natural, the Diſeaſe is great, and wants more vehement Medicines.

The Indication from the vital Faculty, is taken from the Pulſe and Reſpiration; and

and by cordial and proper Diet we must support the Circulation.

When any Secretion is stopt, we find the Circulation irritated to a greater frequency; in this case we must mix both the hot and the cold Method; the hot opens the Obstruction; the cold Tempers, the frequency and celerity of the Circulations. In the Part obstructed the Circulation or Secretions is too slow, in other Parts the Circulation moves too fast, and must be checked by a cold Method.

The matter of our Medicines, we take from Diet, Pharmacy, Chirurgery.

When the Secretions and Evacuations exceed, we temper the Effervescencies of Humours by the cold Regimen, and accelerate the deficient Pulses and Circulation by the hot Method at last.

By the Pulse we know the antecedent Cause of the Disease, and the Actions injured by the Part affected; if we restore the natural Pulse, we cure the antecedent Cause of the Diseases; and if the Pulse exceeds, we use cool Topicks; if it be deficient, we use the hot Topicks to each Part.

The Pulſe will thus direct us in Bleeding and Purging, which are Remedies for fulneſs.

In vehement and great Pulſes we muſt Bleed, as in Fevers, Pains, Defluxions, Rheumatiſms, Giddineſs, Pleuriſies, Quinſies, Phrenſies, and all great Inflammations, and Intemperance in Diet. The florid Age, great Strength, and great Diſeaſes have the ſame Pulſe; and therefore do indicate Bleeding, becauſe the fulneſs of Blood, or its great Rariſaction produce this ſort of Pulſe; and by the full diſtenſion of the Artery we know a *Plethora advaſa*; and the ſame appears by the diſtenſion of the Veins; by an oppreſs'd Pulſe we know the *Plenitude ad vires*; and there are great and ſmall Pulſes mix'd, and a laſſitude is in the Limbs; the quality of the *Plethora* is known by the exceeding or deficient Pulſes, as well as the Colour of the Face, and alſo by the Heat or Coldneſs to the Touch.

We muſt not Bleed in the deficient, weak and ſmall Pulſes; and the Pulſe is unequal in Vehemence and Magnitude, when crude Humours abounds; in deficient Pulſes the Circulation runs too ſlow, and the Digeſtion in the Stomach being too ſlow, it breeds crude Humours; in

these Cases we supply the defects of Bleeding by Fasting, much Friction, Walking, hot Baths, hot discussing Unctions.

We must Bleed, when by the Pulse we apprehend the approach of any great Diseases.

We Bleed in Fevers, and Spitting Blood, because the Pulse is great, quick and frequent, and the Circulation runs too fast.

In the Lienose we Bleed, because the Blood is grumous, and moves little, tho' the Pulse is frequent, yet 'tis small.

We find Obstructions accelerate the Pulse, and for Obstruction we Bleed to move the Stagnation, as well as to abate the swift Circulation.

By Bleeding in particular Parts we draw the Blood that way in the obstruction of the Menses and Hemorrhoids, we Bleed in the Foot, to accelerate the Pulse in those Parts.

In the Pale Complexions, and in the Fat, where the Pulse runs deficient, we Bleed by Scarifying; but in the Lean and Black Complexions we find most viscid Blood, and we Bleed by Lancet; in the Fat the Blood is thin and watry, and fittest for Scarifying.

In the Melancholic the Blood is thick, and makes an unequal Pulse; and an oppress'd Pulse if strong, indicates Bleeding.

Where Bleeding is neceſſary, which appears by a frequent Pulſe; and the Strength is weak, as appears by a ſmall Pulſe, and a weak one; we muſt Bleed by a little at a time, and repeat it two or three times; but where there is an extraordinary Effervescence of Blood in Fevers, or an Apoplexy threatens; we muſt Bleed, *ad animi deliquium*; and all that time we muſt feel the Pulſe, and obſerve the Stream for fear of killing the Patient by exceſſive Bleeding, which plentiful Bleeding cools much, and produces Sweat and Stools. *Galen* in ſuch Caſes Bleeds ſixty Ounces, which is near four Pound of Blood, and that is a 3d or 4th part of the Blood.

We judge of the quantity of the Blood to be loſt by the Pulſe; the greater the Pulſe, and more frequent, the more Blood muſt be taken away; the ſofter and rarer, and more weak the Pulſe, the leſs; *Galen* adviſes to conſider the Age, the Strength, time of the Year, Diet, Excretion, in determining of the quantity; and theſe Things make the Pulſe greater or ſmaller, rare or frequenter; therefore by the Pulſe alone we may determine the τὸ ποσὸν of Bleeding.

We

We Bleed the Lean, and those who have great Veins, more than the plump, and fat and pale Habits; because their Pulse is greater in the Lean, and softer and less in the Plump; soft Habits, perspire much, and have less Blood; we Bleed old Men and Children less, because their Pulse is small and weak, but in Quinsies, and great Inflammations; *Galen* Bleeds Youth of fourteen Years one *Cotyla*, that is, ten Ounces; and the highest Bleeding is six *Cotyla*, or sixty Ounces; the middle Bleeding to this Measure, is thirty Ounces.

In temperate Regions, and in the Spring we bleed most, because the Pulse is greatest in such Circumstances, and less in cold Seasons and Regions, such as is in *Muscovy*. In extream hot Regions, the Fevers are furious, and require great Bleeding, as in *Greece* and *Africa*; but where there are profuse Sweats for Preservation of Health, they Sweat most, and Bleed less.

A great and vehement Pulse are infallible signs of Strength, and if that continues so, we may repeat Vemesection as long as the Disease requires. *Galen* says, he knew a Fever cur'd by Bleeding six Pounds of Blood without loss of Strength, *Chap.* the 15th, *de Vemesectione*: *Galen* bled

bled for the Inflammation of the Eyes three Pound at first, and afterwards one Pound; and then he bathed in a tepid Bath, and anointed the Eyes. In the ἀπαλοσάρκοι, as *Galen* calls the *Celtæ*, he prescribes less Bleeding; and since our Country is moderately Cold, we must Bleed moderately, but in cold Seasons and cold Countries less.

If old Men and Children have great and vehement Pulses, we ought then to Bleed them, as well as the middle Ages; because they have a fulness of Blood, or great Rarifaction; and we Bleed more in the lean than plump Habits; we may generally Bleed the Young to ten, fifteen, or twenty Ounces; the middle Age to thirty, forty, or sixty Ounces, if the Pulse continue great and vehement; and we must observe the Colour, Stream and Pulse in Bleeding, and stop as the Colour changes, or the Stream falls, or as the Pulse alters. *Galen* affirms, That the τὸ ποσὸν of Medicines, Diet, and Evacuations, cannot be certainly known, which makes Physick a conjectural Art; but if we consider the natual Pulse, we may say that there is a certain Rule for the quantity of Medicines, and Diet, which is this; we must use such quantity of Diet, Medicines

dicines alterative, and Evacuations, as will reduce the Pulse to its natural Greatness and Strength; and the diseas'd Pulse will shew how far the excess or defect is by its Numbers from the natural Pulse, and Numbers in Health. Bleeding on the same side as an Obstruction happens in the Artery, empties the Veins on that side, and helps the stop'd Circulation. The Obstruction in the end of an Artery is help'd by Cupping, Scarifying, Fomentations, Unctions, Cataplasms, Plaisters.

Bleeding in the discending Veins revels from the Head, as Bleeding in the Foot helps Hemorrhagies; and Bleeding in the Arms revels the Circulation from the lower Parts, and stops the Flux of *Menstrua*, and Piles.

We derive or help the Circulation thro' the Head, by Bleeding in the Neck; and we Bleed the Splenetic, and all Inflammations on the same side.

In Diseases of the Lungs, Stomach, Liver, Spleen, we bleed in the Arm; but in those of the Belly, Hips, Kidneys, Womb, Arms, Mesentery, in the Legs, in the *Vena poplitis*, or *Malleoli*, in the Diseases of the Throat and Head, in the Jugulars; we Bleed three or four Days before the Menses to promote them; anciently

ently they ſcarify'd one Day one Leg, then the other, and gave Peny-royal, *Dictammum*, or *Savin*, after Bathing in tepid Baths; Bleeding in *vena Poplitis* was obſerv'd to help the Sciatica more than Scarifying; in old Diſeaſes we apply Cupping to the Part with Scarifications.

Thus we may be directed by the Pulſe in Purging.

1. The Pulſe ſhews what Cacochymia prevails, and we uſe the ſame kind of Purges in all thoſe Diſeaſes which depend on it, we uſe Chologogues for the Bile obſtructed, in the Jaundice the ſame; we Purge in Eryſipelas, Inflammations, Tertians, Gout; and we Vomit up the Bile in Summer, becauſe then it is moſt bred; we uſe Melanogogues in Cancers, Elephantiaſis, Melancholics, Quartans, Epilepſies, and in Autumn when the Atrabilis abounds.

We uſe Phlegmagogues in Anaſarcas, Cachexies, Obſtruſtions, Whites, cold Tumors.

We uſe Hydrogogues in Dropſies, Catarrhs, Scurvy, Gout, Stone, out of the Fits.

In

In ſeroſe Humours we evacuate in the beginning, becauſe 'tis ſufficiently fluxile; but the thickneſs of Phlegm, or the viſcidity of Atrabilis wants a Dilution; and ſo do all ſizy Humours want a Digeſtion, or Putrifaction, as well as adilution; and the ſizy Humours muſt not be Purg'd till after twenty one Days, and by Digeſtives we help the Circulation in Phlegmatic Humours.

2. In the quick and frequent Pulſe we Purge little, becauſe Purging accelerates the Pulſe, this makes Purging in Fevers dangerous; and in the beginning of great Inflammations, great Pains, and Defluxions; in hot times of the Year, and in dry Bodies, Purging is very injurious, and in all Effervescences of Humours, in hyſteric and hypochondriac Vapors.

3. They who have a moderate Pulſe, and plump Habit, are fitteſt for Purging.

The Sanguine are hot and humid, and have moderate Pulſes, and bear Purging well.

The Phlegmatic have rare Pulſes, and plump Bodies, and will bear the ſtrongeſt Purges.

In the Winter the Pulſe is moſt rare, and then we Purge downwards; the Fat, who have ſlow Pulſes, bear Purging bet-

ter

ter than the Lean, who have quick and frequent Pulſes.

If the Air be hot, the Pulſe is too frequent; if very cold, the Pulſe is too rare; in the Spring the Pulſe is moderate, as well as in Autumn, and then we Purge moſt ſafely.

4. In ſtrong Pulſes we may Purge with very ſtrong Purges, but not when the Pulſe is weak, and ſo it is in Vomits; but in frequent Pulſes we may uſe gentle Vomits, in the beginning of Fevers; but in the Increaſe and State of Fevers we do not Purge, becauſe the Pulſe is very frequent; but in the Declination the Pulſe is more moderate, and then we may Purge, becauſe the Humours are made more Fluxile after their perfect Digeſtion; where no Coction is expected, we Purge at any time, as in ſeroſe Humours, and the rendring the Humours Fluxile is the beſt Preparation.

5. The more acrid any Purge is, the more it irritates the Guts, and circulatory Organs, and thereby promotes the Circulation; therefore theſe ſharp Purges are only proper for cold Humours; and the Bitteriſh and Sub-acrid are moſt ſuitable to hot Tempers, becauſe they diſturb the Pulſe leaſt.

6. The

6. The quantity of Purging is known by exceſs or defects of the diſeas'd Pulſe, and by the quantity of the Cacochymia; the quality of the Cacochymia is alſo known by the Pulſe. Thirſt is accounted a ſign that the Pulſe has evacuated ſufficiently, but the reducing the Pulſe to its natural Number is the moſt certain Sign; for when the Pulſe is return'd to that, we muſt neither Bleed, Purge, nor give any Medicines.

Thus the Pulſe will direct us in the uſe of Diuretics, Diaphoretics, *and all Alteratives.*

In the uſe of *Diuretics*, if the Pulſe runs to any exceeding Numbers, we muſt uſe the cool, watery, acid or terreous Taſtes; if the Pulſe runs in low Numbers, we muſt uſe the Taſtes which are Acrid, Corroſive, Salt, Aromatic, for our Diuretics; but theſe are never proper in hot and dry Tempers, nor in Fevers, or exceeding Pulſes.

In the uſe of *Diaphoretics* we muſt conſider the Pulſe; if it be too ſlow, we muſt uſe the hot, acrid, and bitter, Sudorifics; but if the Pulſe runs too faſt, we muſt mix Opiates with the Sudorifics to ſtop the

the Pulſe, and cold Water and cold Baths procure the Sweats in hot Tempers, and hot Seaſons; the Pulſe in Sweating muſt be undoſe, which is a Species of ſlow Pulſes; neither a Pulſe too frequent or too ſlow will produce Sweats.

In the choice of Baths the Pulſe directs us thus, for a ſwift Circulation to uſe cold Baths; for a ſlow Pulſe and Circulation to uſe tepid Baths; and we muſt continue our Sweats ſo long as the ſtrength of the Pulſe will bear.

In the uſe of Splenetics, Stomachics, Hepatics, Thoracics, Digeſtives, Cephalics, Uterines, we muſt choſe thoſe which are cooleſt in exceeding Pulſes; and the hot Alteratives in deficient Pulſes.

In the Preſervation of Health, we choſe the cold Regimen for exceeding Pulſes, and the hot Regimen for the deficient.

The more exceeding the Pulſe is, the cooler the Diet muſt be; and the ſlower the Pulſe, the hotter the Diet muſt be.

No Diet, or the thinneſt muſt be given in Paroxyſmes, becauſe the Pulſe is then moſt frequent; and after Eating the Pulſe is accelerated, but it is leaſt diſturb'd by cool and humid Diet; therefore this is moſt proper for exceeding Pulſes.

We may know any Errors in Diet by the Pulſe, which riſes immediately after Eating, but is greater when the Chyle is diſtributed, and in Conſumptive Caſes is very great.

The lower the Pulſe runs, the warmer muſt be the external Topicks; the more exceeding the Pulſe is, the cooler muſt be all Topicks; and we muſt uſe *Narcotics* alſo to abate the Celerity of the Pulſe.

Thoſe Things which heat moderately ripen crude Humours, as warm Diet, moderate Friction, warm Cataplaſms, warm Baths, or Perfuſions; the Pulſe is Feveriſh during Maturation, and it will bear neither very cold, which hardens the Tumor, nor very hot Topicks, which perſpire thin Humours, and inflame the Part.

Then the Pulſe will direct in prognoſticating or undertaking any Diſeaſe.

Thoſe Diſeaſes are leſs dangerous to which the Conſtitution, the Age, the Habit of the Body is very ſubject, becauſe the Pulſe is alter'd from its natural State but a little in ſuch Diſeaſes; and where the numbers of the Pulſe do ſtand near one another, thoſe Diſeaſes often change from one to the other; ſo a Pleuriſie will turn into a Peripneumonia, an Ephemera

into an intermitting Fever, and into a Consumption, &c.

I will next propose the Method of judging of the Urine and Excrements by the Pulse; and of their Colours, Consistence, Sediments; and that they shew no more of a Disease than the Pulse can do, if it do not depend on the Disease of those particular Parts.

The διαχρήματα shew the nature of the Concoction in the Stomach, and the Urine the healthful and diseas'd Sanguification of the Chyle, which is the second Concoction in the Veins; if the Pulse will shew the same Cacochymias as the Stools and Urine do, 'tis more agreeable to the Dignity of a Physician to neglect those common Signs, and to use his Skill in the Pulse instead of Inspection of Urines and Stools; the Pulse exceeding will shew the excess in Digestions in the Stomach, and Veins; and the deficient Pulses will shew the crudity or want of Concoction in both; and by the Cacochymia which the Pulse will indicate, we know the several degrees of Adustion or Crudity in our Humours, whether they be evacuated by Stools, Urine, Spit, or appears in the Skin of the Face and Body.

I will

I will here give a Parallel betwixt the ſeveral States of the Pulſe, and the Colour, Conſiſtence, and Sediment in the Urine, by which it will appear that we may know the State of the Urine by the Pulſe, as to its Digeſtion, Colour, Sediment.

The healthful Urine is a little Yellow, of a moderate Conſiſtence, and has a White equal (that is an undivuls'd) Sediment, proportionable to the Drink.

The Pulſe ſhews the healthful State of all the Humours and Secretions when it ſtands at the healthful Numbers in a Morning, when the Urine ought always to be obſerv'd.

The Urine is too crude, or too much digeſted, and then has different Colours, Sediments, and Conſiſtence; the crude State is known by deficient Pulſes, and the over Digeſtion by the exceeding Pulſes.

The watery part of the Urine is from the vehicule of the Chyle, the conſiſtence of Urine, and the ſediment *Nebula eneoreoma*, from the *ſuccus Nutritius* diſſolv'd in the Vehicule, the Colour from much or little Choler, or that which is under or over digeſted, the Salt from the *Serum* of the Blood.

The thin and pale white Water was call'd λεπτὸν or ὠχρὸν, and by these we discern the Indigestion in the lowest degree, the pale wants the *succus Nutritius*, and the white Urine has a crude *succus Nutritius*, pale Urine is from Phlegm, and the thin from *Serum*.

In the crude State of Blood *Galen* places τὸ φλέγμα καὶ ἰχῶρ, and after Blood, which is the most temperate Humour *Galen* places the ἐανθὴ χολὴ, and the μέλας χυμὸς produc'd by Heat; a Cloud in the top is a sign of a Crudity in some degree, but a Cloud in the middle is a sign of less Crudity, but the Sediment in the bottom is a sign of more Digestion.

A thin, pale Urine, can have no Sediment, because it wants chylose Matter.

Thick and white Urines are always crude Urines.

Women have paler Urine than Men, less in Substance, and have more Sediment, and so have Children; in these the Circulation is more rare, as well as the Pulse in phlegmatic Persons.

The Urine, with a little Sediment, and sometimes with none, is a sign of Indigestion, beginning in Fevers; a crude Humour makes a white Sediment, but 'tis unequal and divuls'd.

Dige-

Digeſtion begins with a Cloud, then an ἐναώρημα, than an ὑπόστασις.

The beſt Urine has a moderate Conſiſtence, and is from Blood well digeſted; the Crude has a thin Conſiſtence, or a pale, thick; the over Digeſtion makes a thick and high colour'd Urine, Yellow, Lixival, or Black.

In pale Urine little Choler is mix'd with the Urine, the πυρρὸν, or Gold Colour has more Choler, the ξανθὸν has a moderate Degree.

Pale and white Urines ſignifie weak Digeſtion, and weak Circulation, as deficient Pulſes do; and they happen in old Men, and long Diſeaſes.

In weak Conſtitutions, Obſtructions, the beginning of Fevers in Children, much Drinking, Dropſies, Cachexies, Diabetes, Convulſions, and in all Diſeaſes where the Circulation ſtops; and thereby makes a fuſion of the *Serum* from the viſcid Parts of the Blood, and in obſtructions of Kidneys, in the Stone, or the obſtruction of the Circulation thro' the Brain in malignant Fevers, or Abſceſſes; the *Serum* is paſs'd by Urine, without much Salt, or Choler, or *ſuccus Nutritius*; and in Fevers, pale Urine prognoſticates Phrenſie or Death; the pale Urine is a ſign of crude

Serum, the white of phlegmatic Humours, the *Rufa* or *Fulva* is almoſt perfectly digeſted; the High, Yellow, is a ſign of much Choler; the Red of great Inflammation or Saltneſs; the Black Urine, as well as the Yellow and Red, are ſigns of over Digeſtion; and ſince all theſe Cacochymias, whether hot or cold, are diſcernable by the Pulſe, the inſpection of Urine is not ſo neceſſary.

In Tertians, Watchings, great Paſſions the Urine is thin and yellow; the *ſuccus Nutritius* is wanting, but the Choler abounds, and is vitelline.

The Urine is thick and black in melancholic Humours, after Quartans, and long Melancholics; the Livid is a degree towards Black, and is a ſign of a Mortification.

Greaſie Urine from the Colliquation of Fat, red from ſerous Blood, milky from Chyle, ſlimy *Mucus*, or *Fluor Albus*; fætid Sediment ſignifies Putrifaction.

Troubled thick Urine, which remains ſo like that of Horſes, is a ſign of Headach, and great confuſion of Humours thro' a violent Ebullition; but when the thick begins to ſubſide, 'tis a ſign of ſome Digeſtion, and ſeparation in Fevers; they who have a *Criſis* on the 7th, have a red

Cloud

Cloud on the 4th; the watry Urine is a ſign of an Abſceſs, if it continue long in Fevers.

A farimaceous Sediment is a ſign of a long Fever, a Bilioſe of an acute Diſeaſe, and this is as well known by a ſlow and a quick Pulſe.

The nearer the Pulſe or Urine are to the Natural, the leſs is the Danger; the watry or thick Black are dangerous, and the Fætid and Bloody.

In the watry Urine the Pulſe is low, or Humours are fix'd in ſome part, and produce an Abſceſs; but in the very high colour'd Urine the Pulſe runs too quick, and the Fever has a *Criſis* by ſome Evacuations.

The Fætor in Urine is accompany'd by a quick Pulſe, and both are ſigns of Putrifaction, Colliquation, Death, or Delirium.

Galen has well diſtinguiſh'd two ſorts of black Humours, τὸ μέλαν ποτὲ ἐνδείκνυται ψῦξιν ποτὲ δ' θερμότητα; and he ſays, when black Humours are produc'd by Cold, a Livid preceeds; in this Caſe the Blood ſtagnates, and the Pulſe is very rare; but when the Black is produc'd by Heat or διὰ ὑπερόπτησιν, a yellow Colour in the Urine preceeds, and in this Caſe

the Pulſe is extreamly quick and frequent.

The Urine is thick and red in Fevers, but the quickneſs of the Pulſe does as evidently diſcover a Fever, and the Aduſtion of Humours.

The Urine is Lixival in the ſaltneſs of Blood, and that Cacochymia is known by the frequency of the Pulſe, and thin Habit of Body.

The furfuraceous, ſquammoſe, and furinaceous Sediments, are ſigns of the Conſumption of the Kidneys, if the Urine be well digeſted; or of the whole if there be a Fever, and that appears always in the Pulſe.

Thick and pale Urine are ſigns of recovery in Fevers, and ſo are more ſlow Pulſes, the thin and black of Death; and theſe have weak and quick Pulſes.

All our Excretions, as well as the Urine, ſuch are Stools, Spits, Vomits, have their Colours from the Cacochymia; they are yellow from Bile, white from a phlegmatic Lympha, black from Atrabilis, cæruginoſe from Choler and Salt mix'd.

Galen diſtinguiſhes ſpumoſity of Humour thus, ὁ ἀφρὸς διαψύξιν, is indigeſted Humours only Air mix'd with them; but the τὸ ἀφρῶδες διὰ θερμότητα is a ſign of

of Heat, and is like the Broth of boiling Water; this is known by the exceeding Pulſes, and the former by the deficient.

Galen calls viſcid or fizy Humours φλέγμα κατοπτημῶδες, theſe Viſcoſities depend on Heat.

Galen derives the ceruginoſe Colour from the ὑπερόπτησεως of the Serum.

CHAP.

CHAP. III.

Containing the Tables.

TAB. I.

Containing the most healthful Numbers of Pulses in one Minute, according to the several Climates, which are distinguish'd by every Fifth Degree, betwixt the Æquator and the Northern Pole.

The Number of Pulses.	The Degrees from the Æquator.
120	This Number happens under the Æquator.
115	Fifth Degree from the Æquator.
110	10
105	15
100	20
95	25
90	30
85	35
80	40
75	45
70	50
65	55
60	60
55	65
50	70
45	75
40	80
35	85
30	90

The

The Ground on which I fram'd this Table was by obſerving that in *England*, the Pulſe moſt naturally runs about 70, and this Kingdom is 50 Degrees or more from the Æquator; I diſtinguiſh'd the Degrees by the Number 5, for the more eaſie Calculation.

The different Manners of all Nations depends on the Pulſe natural to each Climate; and that is produc'd by a particular hot or cold Diet, or Air, Exerciſe, and Paſſions peculiar to each Nation.

If we reflect on the general Pulſes in the Climates above-mention'd, we ſhall find the Latitudes; the healthful Pulſes run is from 30 to 120 in a Minute, and that Latitude is 90 Degrees from the Æquator.

In the 45th Degree the Pulſe runs 75 Beats, and that Number muſt be eſteem'd the moſt moderate and healthful Pulſe, in reſpect of all the varieties which happen in the 90 Degrees from the Æquator.

Since *Great Britain* is plac'd in a Latitude from 50 at *London*, to 53 at *York*, to 56 at *Edenborough*, we muſt allow the natural and moſt healthful Pulſe in *Great Britain* to run at 70 Beats; and I find by Expe-

Experience, that towards the Southern Parts, it will run more from 70 to 75; and in the Winter, and Northern Part of *Britain*, betwixt 70 and 65; so that from 75 to 65 may be a healthful Pulse.

The several times of the Year alter the Pulse in *England* from 70 in the Winter, to 75 or 80 in the Spring, in hot thin Tempers; and to 85 or 90 in Summer, or extream hot Weather.

The Cold in the Winter sinks the Pulse sometimes if extream 10 Beats, but Diet soon raises it; in Winter the Chyle is Pituitous or Crude, in Spring the Blood is rarify'd, in Summer much Bile is produc'd, and in Autumn the Melancholy, and these alter the Pulse.

All the Climates above 45 towards the Æquator have exceeding Pulses, and Choleric thin Tempers and Habits; all the Climates from 45 to the Pole, are pituitous Tempers, and naturally plump Habits; and in *England* we may reckon our selves in the first degree of pituitous Tempers, being next to the temperate Climate at 45 Degrees.

In the Fits of high Fevers I have found the Pulse at 120, but whether extream cold Air or Diseases will sink the Pulse to

30,

30, I cannot yet discover; for I never yet observ'd it under 50, and rarely under 60 Beats in a Minute.

Galen usually calls the *Celtæ* ἀπαλοσαρχὶ καὶ λιπόχροι, which he esteem'd a sign of a pituitous Temper in the *Celtick* Nations.

TAB. II.

Containing the Pulse according to the several Ages.

I. THE Pulses of Children under Seven Years old, *March* 26, 1706.

Ages.	Pulses in a Morning in one Minute.
Three Years old a fair Boy with a moderate Habit.	93
Five Years in a Girl of a thin Habit, and brown Hair.	106
Six Years old a Girl subject to a Cough.	105

Note, That the Reason why Children are more subject to Fevers and Passions than in other Ages, is the great frequency of their natural Pulse, which is near to the

the Number which ſhews a Fever; and by the frequency of their Pulſe we diſcern the greatneſs of their innate Heat.

The *Chineſe* do not obſerve the Pulſes of Children under Five Years, but they judge of them by the common Signs of the Cacochymia.

II. The Pulſes from 7 to 14.

A Boy above Seven in *March*, and his Pulſe was the ſame in *May* following.	80
A Boy of Eight Years old in *March*	82
and in *May*	86
A Boy of Nine Years old in *May* following but 84.	94
A Boy of Ten in *March*	85
Another	80
A Third	94
A Fourth in *May*	80
A Fifth in *May*	83

A Sixth

A Sixth in *May*	94
A Seventh in *March*	90
In *May* the ſame.	89
Eleven Years old in *March*	78
The ſame Boy in *May*	100
Another Boy in *March*	68
Another in *March*	92
The ſame in *May*.	89

I found theſe varieties of Pulſes in a Boy of Eleven, 69, 70, 72, 76.

By this 'tis evident, That young Boys have a Latitude in their healthy Pulſes.

A Child of Ten Years, after a Glaſs of Sack in a Morning had 90 Pulſes.

Twelve Years old	
A Boy in *March*	85
Another in *March*	78
In *May*	90
A Third in *March* and *May*	73
A Fourth in *May*.	95
Thirteen Years a Boy	83
A Second in *March* and *May*	106
Another	80
Another in *March*	84
In *May*	90
Another	86

Fourteen

Fourteen Years old
A Boy in *March* 102
In *May* 100
Another in *March* 84
In *May* 69
Another in *May* 78
Another 86
Another 77
Another 84

III. The Pulſes from 15 to 25, or 40.

Fifteen, a Boy in *March*
And the ſame in *May* 70
Another in *March* 98
Another in *May* 76

Sixteen Years old
A Boy in *March* 81
In *May* 77
Another in *March* 98
In *May* 80
A Third in *March* 92
A Fourth in *May* 77
A Fifth Hypochondriac Boy 97

Seventeen Years
A Boy in *May* 66
Another 78

Eighteen Years Some young Mens Pulſes in the Winter	72
Twenty Years	76
Twenty two Years very healthful and good Habit, and this Number happen'd divers Mornings	74
Twenty three Years a young Man	72
Twenty four Years lean and tall	70
Twenty five a thin Man in *May*	80
Thirty five a fat Man Hypochondriac after Dinner, he was 90 Beats	66
Forty, two Men of Forty both lean	65
Thirty two Years in *May*, this was a freſh healthful Man of a ſound Temper	83

IV. The Pulſes of old Men and old Women.

Sixty Years in a thoughtful, temperate, but obſtinate Man	60

Eighty, an old Man in a Morning	60
This old Man drank Ale, and after Dinner had Pulſes	105
Seventy, an old Woman in a Fever had Pulſes	84
Seventy eight, an old Man in a Dropſie of the Breaſt and fat Habit	78
Ninety Years old he was very Hearty, and of a moderate Habit	64

The Pulses of divers old Women taken in the Morning Fasting, at the Hospital in Lichfield, *in* May.

Ages.	Pulses.
50	77
Another 50	86
60	80
71	76
72	77
77	75
80	68
81	75
83	84

Note, That the different Constitutions, and Diet and Passions, alter the Numbers to great varieties in all the Ages mention'd; the Pulse in most Old and Young runs alike very frequent, but in the middle Age the Pulse is more rare, as well as great and strong.

The Pulses of young Females, and the older.

A Girl of Nine Years, thin Habit, and fair Hair	84

Thirteen

Thirteen Years a Girl of a thin Habit, brown Hair, at other times 76 and 80 in a Morning — 75

Fifteen, a fat ſanguine Woman in *May* — 92

Twenty two, a thin Woman Conſumptive — 87

Thirty, a Woman with yellow Hair, at other times 80 — 76

Another Woman very healthful — 73

Forty Years a fat, freſh, ſanguine Woman — 64

In Winter, in *May* — 79

Fifty, a fat, freſh, ſanguine Woman — 77

Two Big-belly'd Women had 80 Pulſes in a Morning, and then had Girls.

Another Big-belly'd Woman had in a Morning 94, and after Dinner 110.

And a ſecond had above 90 Pulſes in a Morning, and Girls.

But if any feveriſh Diſorder happens, that will deceive me in Prognoſticating.

 I found

I found the Pulse in a Big-belly'd Woman near Miscarriage 97

I observ'd the Pulse in the *Fluor Albus* 65, and during the *Catamenia* it runs low, under 70 ordinarily

Note, That the Pulse runs faster after Conception, and exceeds more after the Conception of Males.

A Table

A Table of the Pulſes according to Diſeaſes, and the Pre-Diſpoſition to them by the ſeveral Cacochymias.

The Number of Pulſes.

140. THIS is the moſt exceeding Pulſe, ſuch as happens in Dying Perſons, and 'tis uſually call'd the formicant Pulſe, which is very frequent and languid; and we find it in Fits of Fevers, or *Cauſus*; and in Childrens, whoſe Pulſe are naturally very frequent; 140 is as many Pulſes as can be counted in a Minute.

120. This Number the Pulſe runs in ordinary Fevers; in hot Tempers I have counted in an Intermitting Fever oft above 100, and in hectic Fits I have counted 112 Pulſes, 114, and 100 in a Morning commonly; the more frequent the Pulſe of the Hectical is, the more is their danger; I have then counted 120 Beats.

100. This Pulſe certainly ſhews a hectic Fever, the Pulſe being ſmall and frequent; and in a remiſs, intermitting Fever,

it ſtands much at this Number; but in ſome Hectics, whilſt the *Tubercula* are crude, the Pulſe is not much above 80; but as they impoſthumate, the Numbers of the Pulſe increaſes.

95. From this Number to 100, Aſthmas, Catarrhs, Defluxions, Pains, Inflammations, Gout, Cholick, move the Pulſe, in theſe Diſeaſes; whilſt the *Ephemera*, or continent Fever ſtands, the Pulſe beats 100, and is great and vehement; but as theſe Diſeaſes go off, it ſinks towards 80 Pulſations; at theſe Numbers are diairy Fevers, and vapour Fits; in hot Tempers are diairy Fevers from Paſſions.

90. From 85 to 90, I place the *Atrabilarian* Tempers and Diſeaſes, which diſpoſe to Vapors, hyſteric and hypochondriac Fits, and *Delitia*; black Vomits, Spits, or black Urines or Stools, the Hæmorrhoids, hot Winds, bitter and acid Vomits, much Watching, much Thirſt, the Cancer, Elephantiaſis, Dyſentery, Quartans, malignant Itching; they are of black Hair, and Lean; they have Biles, Morphews, Scales, Schirrus, Convulſions; in all theſe the *Bilis Glaſtea*, or *Atra* prevails, and the Pulſe of Hypochondriacs runs betwixt 90 and 100; the livid

Colour

Colour of Humours is a leſs degree of Black.

Pulſes from 80 *to* 85.

I reckon the ſalt Cacochymia; this is the ſalt and bitteriſh State of Humours in the Scorbutic, which produces putrid Gums, pains in the Limbs, Formications, Laſſitudes, Ulcers, Puſtules, Herpes, Hæmorrhagies, Diarrheas, ſalt Rheums, falling of the Teeth, Spots and Scurfs in the Skin; they are ſubject to the Gout, Stone, Strangury, Æruginoſe Vomits from Æruginoſe Choler, their Urines are Red, Lixivial; they are ſubject to Conſumptions, Convulſions, Ulcers of the Kidneys, Cough, Leproſie; the Habit of the Body is thin and lean, there is a Fætor in the Mouth, Urine, Sweat.

Pulſes from 75 *to* 80.

I place the bitter acrid Choler, which is viſcid and vitelline, which diſpoſes to choleric Vomits, Choleras, Jaundice, Tertians, burning Fevers, Eryſipelas, Thirſt, want of Appetite; the Habit of the Body is fleſhy, the Face ſanguine and florid; they are of ready Wits, Bold, Boaſting, the Pulſe vehement.

Pulſes

Pulſes from 70 *to* 75.

All above 75 are exceeding Pulſes, and hot Conſtitutions; all under 70 are the cold Tempers, and cold Diſeaſes commonly call'd the Pituitous, and their Pulſes are deficient; but betwixt 70 and 75 ſtands the moſt moderate healthful Pulſe, and this State of Humours is beſt deſcribed by the ſweetneſs of Humours; theſe Tempers are ſubject to a *Plethora*, Laſſitude and Fevers, and Hæmorrhagies from fulneſs and ſleepy Diſeaſes; the Sweetneſs obſcures the Acrimony of the ſecretitious Humours, and Tempers them.

Theſe are the ſanguine Conſtitutions, their Faces are florid, and their Habits fleſhy, the Skin ſoft, temperate and moiſt.

Pulſes from 65 *to* 70.

Are the ſweet pituitous Tempers, their Habit is plump, and their Faces paler than the Sanguine, their Skin ſmooth and cool; theſe are ſubject to Quotidians, overfat, they become Lethargic, Paralitic; they have, if Females, the *Fluor Albus*, and become cachectic Oedematous.

I have

I have obſerv'd after the Flux of the *Menſtrua*, and after Lying-in 65 Beats, and that the Pulſe was weak, ſlow, undoſe.

Pulſes from 60 *to* 65.

Here I place the watry or ſerous Temper, or Cacochymia ; theſe are ſubject to Dropſies, and watry Tumors in the Legs, Face, Head, *&c.* have weak Stomachs, dull Senſes ; this is the inſipid Pituita ; they produce Catarrhs, the Urine pale.

Pulſes from 55 *to* 60.

This is the *Acerbe Pituita* in the cold Melancholics ; theſe have much Fear and Sadneſs, they are cold in their Extremities, their Faces livid as in old Age, their Blood Stagnates, and their Pulſes are ſlow ; their Phlegm vitreous, which cauſe Gripes, cold Winds, ſour *Ructus*, ſwell'd Spleen, Binding of the Body, much Spitting, Noiſe in their Ears, tenſive Pains from Wind, Oſcitation, Pandiculation from Stagnation of Blood.

By Analogy to the hot Pulſes, I might place here two Diſeaſes below the cold Cacochymias, as the hot Diſeaſes are above the hot Cacochymias.

Pulſes

Pulſes from 50 *to* 55.

The undoſe, weak Pulſe, after great Evacuations without a Fever, as Hæmorrhagies, Diarrheas, Sweats, Diabetes.

Pulſes from 45 *to* 50. .

An intermitting Pulſe is referrible to the rare Pulſes, and is uſual in old Men, and ſome particular Conſtitutions, and probably is at theſe Numbers.

Pulſes from 45 *to* 40.

Here by Analogy I conjecture the dying Pulſe may be plac'd, which is call'd the vermicular Pulſe; but I muſt confeſs that I want a full Experience in theſe low Pulſes, becauſe I have not yet found any Pulſe lower than 55 Beats in a Minute, and the Pulſe rarely is found under 60; therefore I muſt appeal to a farther Experience as to all Pulſes under 60, and I cannot poſitively aſſert any thing concerning them.

A Table of the Morning Pulſes in ſeveral Months, as they vary, with a Compariſon betwixt the Pulſes, and Barometer and Thermometer.

The New Moon.	Day,	The Pulſes.	Barometer.	Thermometer.
Jan.	3	86	2deg.belowR.	1 deg. above F.
	4	82	2deg.aboveR.	at Froſt.
	5	86	2deg und.Ch.	2deg. above H.F.
	7	92	1deg.und.Ch. Snow.	1 degree under Froſt.
	8	82	At Chang. Snow N.W.	3 deg. above G. Froſt.
	10	82	1 deg. ab. Ch. Snow N. W.	3 degree under G. F.
	11	95	1 deg. ab. Ch.	at H. F.
	12	76	at Chang.	5 deg. und. H. F.
	13	84	at Ch.	5 deg. und. H. F.
	14	84	3 deg. below Chang.	5 deg. und. H.F.
	18	86	1deg.aboveR.	3 deg. above F.
Full	19	77	at R.fullMoon	at F.
Moon.	20	85	1deg.aboveR.	3 deg. und. Cold
	21	90	1deg.aboveR. Foggy.	5deg.aboveH.F.
	22	90	1 deg. und. R.	5deg.aboveH.F.
	23	83	1deg.aboveR. Froſt N. E. a little Snow.	5deg.aboveH.F.
	24	82	2deg.underR.	5deg.aboveH.F.
	25	105	5 deg. above M. R. a feveriſh Cold.	at Cold.
	28	97	BetwixtR.and M. R. much Rain.	near C.
	29	81	1deg.aboveR. clear N. W.	near C.
	31	83	1deg.aboveR.	above C. 2 deg.

In

In *February* the Pulſes run thus.

New Moon.		
2	96	
3	86	
4	100	Feveriſh.
5	86	
6	100	Feveriſh.
7	91	
8	83	
9	95	Aſthmatic.
10	86	
11	92	
12	90	
13	84	
14	72	
15	76	This is the healthful natural Pulſe.
16	78	

Pulſes

Pulses in *March*, New Moon.

		Barometer.	Themometer.
1	84	1 deg. und. Ch.	under C.
5	75	1 deg. und. Ch.	5 deg. under C.
6	72	2 deg. und. Ch.	at C.
7	74	at R.	2 deg. under T.
8	80	near R.	2 deg. under C.
9	74	1 deg. above R.	2 deg. above C.
10	84	1 deg. und. Ch.	3 deg. above F.
12	79	1 deg. under R.	7 deg. below C.
20	70		
22	76		
23	71		
26	72		

Pulses in *April*.

2	76
9	77
11	86
12	78
16	71
17	76
20	74

Pulses in *May*.

4	80
5	85
6	75
7	75
8	80
9	84
13	82
14	80
26	82
27	84
28	88
29	78

Pulſes in *June*.

		Barometer.	Thermometer.
5	75	3 deg.aboveCh.	at T.
6	72	the ſame.	the ſame.

Note, Theſe two Days were Cold, the Pulſe alter'd, tho' the Glaſſes ſtood the ſame.

8	78		
9	81	at R.	5deg.und.warm.
10	83	at R.	at T.
11	70		
12	87	at R.	at T.
13	80	2deg.aboveR.	2 deg. under W.
14	77	1deg.aboveR.	5 deg. under H.
27	77	at R.	5 deg. under T.

Note, That *June* was Cold and Rainy after the Full Moon.

I obſerv'd, That the 19th of *November*, Full Moon, the *Barometer* ſunk to the bottom, it Rain'd and Snow'd.

The Pulſe was 76, and the 20th 76, 21ſt 66, 22d 76, 23d 70, 24th 76, 25th 78; all theſe Pulſes happen'd whilſt the *Barometer* ſtood low, and the *Thermometer* likewiſe low; but as both roſe, the Pulſe came to 80, 82; but whether I may aſſert any thing poſitively, that it will always happen ſo, I muſt leave to farther Experiment.

The hot Tempers, and hot Pulſes have the ſeveral Variations noted in the ſeveral Months; but if a Catalogue had been kept of any Pulſe in a cold Conſtitution, or ſubject to deficient Pulſes, and cold Diſeaſes, the Numbers would have been very different.

In the Month above-mention'd theſe Obſervations I made, That in *November* I found the Pulſe to run betwixt 70 and 80 for the moſt part; in *December* the Pulſe did run for the moſt part above 80, and ſo it continu'd till the middle of *February*; in *March* the Pulſe runs much betwixt 70 and 80, as it did in *November*, and the ſame Pulſe was continu'd in *April*; but in *May* the Pulſe riſes, and runs about 80 or above;

above; by this Obſervation 'tis evident, That the Pulſe riſes both in hot and cold Air, and Seaſons, among us; and that in *April*, and any temperate Weather or Seaſon, the Pulſe runs moſt naturally betwixt 70 and 80; and I muſt obſerve, That the laſt Winter was open, and warm, and the Spring forward, and the Weather has an influence on the Pulſe, tho' 'tis difficult to obſerve it.

I may obſerve next, That in old Perſons, cold Tempers, and cold Diſeaſes, when the Pulſe ſtands at 60, then ten Pulſes will be wanting to the Variations in hot and cold Seaſons; in the ſeveral parts of the Year, in *May* and *June*, I have obſerv'd ſome old Mens Pulſes at 64, others at 70, or 75, in very hot Weather, and hot Diſeaſes.

I have not try'd the Pulſe in extream cold Winters, but may ſuppoſe that will ſink the Pulſe lower than ever I have found it, which ſeldom runs under 60 Beats in a Minute.

I took the Pulſe of 13 Alms-Men in the latter end of *May*, ſome were 91, but the moſt about 80.

I have found the Pulſes of ſome young Men about 60, and then it Beats ſtrong, and this Conſtitution is a ſign of long

Life; in these Constitutions the Pulse must stand lower in hot Seasons, and the other changes of the Year.

In *November* the Pulse of a healthful young Man was 70, of a young Woman 69 in a Morning.

A Table of the Cold Diet from Vegitables.

1 A Mealy Diet, such as is made of Corn, Rice, not fermented as Water-gruel; Rice or Barley-broth, boil'd Wheat or Rice, Oat-cakes, Puddings, Bread dip'd in Water to wash out the ferment.

2. All sweet sub-acid Fruits, as Strawberries, Apples, Pears, Plumbs, Cherries, Apricocks, Peaches, Raisins, Figs.

3. The sweet Oily Diet of Almonds, Nuts, Emulsions, Oil-Olive.

4. The sweet slimy Fruits or Salads, as Melons, Gourds, Cowcumbers; these have a cool Slime, Purslain, Lettice, Spinage, Borrage, *&c.* young Nettles made in Thea are crude in Taste like a green Pea, and thereby it cools hot Bloods.

5. The

5. The acid Salads, or Pot-herbs, Sorrel, Dock leaves, red Shancks, Barbery-leaves; and all acid Liquors, as Verjuce, and Water made into Poſſet-drink, or Syrrup of Verjuce and Water, Cyder and Water.

6. The Stiptick Taſtes, *Acerbes*, Quinces, Sloes, Crabs, Medlars, Cervices, Barberies, Cornelian Cherries, Cranberries; all have an Acerbity.

7. Water-drinking, Infuſions of Liquoriſh, Decoctions of the Woods, Small-beer, Wine and Water, Toaſt and Water; all ſort of Theas, as Sage, Roſemary, Bohe.

Theſe Taſtes are in the cold Diet from Animals.

1. The ſweet Milky Diet, Aſſes, Womens, and Mares-milk, and Goats, Milk-Pottage, Milk and Bohe-Thea, Milk and Water for Drink.

2. The ſub-acid Diet of Butter-milk.

3. The ſerous Diet of Broths, Whey, ſtill'd Milks, Poſſet-drinks, Milk and Water, Butter-milk, Poſſet-drink.

4. The mucilaginous Diet of young Animals, Fiſh, Eggs diſolv'd in Water, either Whites or Yolks, decoct of Snails, Ivory, Iſinglaſs.

5. The Mooriſh crude Diet of Water, Fowls, Swans, Ducks, Teal, Wood-cocks, Snipes.

6. The fat Diet of Butter, Suet.

7. Raw Gravies, Meat Raw, Roaſted, or Boil'd, and all Meats eat Cold.

A Table of the hot Diet from Vegitables, which are diſtinguiſh'd by their Taſtes.

1. OF Acrids, as Muſtard or Scurvy-Graſs-Ale, boil'd Turnips, and Cabbage, Creſſes, Horſe-radiſh-root; all theſe have hot burning Taſtes.

2. The corroſive Acrids as Garlick, Onions, Leeks, Chives, Muſhrooms; theſe Taſtes are more hot and burning, and Inflame the Blood more.

3. The Acrid Aromatics, as Ginger, Nutmegs, Cinnamon, Clove, Fennel, Seleri, Parſley, Parſnep, Vaynillyos in Chocolate; all theſe evidently Heat and Inflame.

4. The ſweet pungent Diet of fermented Liquors, Wine, Ale, Metheglin, Brandy; theſe evidently ferment our Bloods, and are pungent; if much Bottl'd, Honey drinks Heat much.

5. The

5. The bitter Diet, ſtrong hop'd Drinks, Wormwood, Beer, Mum, Ratafia Waters, bitter Almonds, and all Kernels of the ſame kind; Orange and Lemmon-Peals; all Peas and Beans are bitteriſh if old; two Diſhes of Coffee will raiſe the Pulſe ſeven or eight Beats in hot Conſtitutions.

6. Cuſtom has made Tobacco part of our Diet, and that inflames the Blood and Spirits by its actual Heat, one Pipe raiſes the Pulſe five Beats in a Morning in one Minute; roaſt and broil'd Meats are hot from actual Fire in them, and ſo are all hot Theas and Chocolate, Pottage, warm Drinks.

Theſe Taſtes are in the hot Diet from Animals.

1. The ſalt Diet of ſalt Fleſh or Fiſh, potted and ſmoak'd Meats, Bacon, Tongues, hung Beef.

2. The bitter acrid Diet of Livers, old Cheeſe, the Fleſh of Bitterns is bitteriſh.

3. The high fætid Diet of Herrings, Salt-Fiſh, Salmon, Lobſters, Oiſters, Crabs, and putrid Meats, Eggs, hunted Veniſon, Stale Meats, Viper Broths, or Wine.

4. The dry Diet of Birds, who feed on Seeds or Worms.

5. Broil'd, fry'd, bak'd Meats, dry, roaſted and ſmoak'd Meats.

I have here plac'd theſe Tables of Diet, That every Perſon might diſcern what is a hot or cold Diet, and ſo chuſe that which is proper to his Conſtitution and Pulſe.

The Engliſh *Phyſician's Cabinet, divided into Drawers, according to the ſeveral Phyſical-Taſtes in general; and each Drawer is ſub-divided according to the ſeveral Species comprehended under the general Taſte, and the cheapeſt and moſt effectual muſt be choſe for his Practice.*

I. *Drawer of Aſtringents.*

1. THE Earthy Stipticks, as Coral, Coralline, and Green-Moſs, Cup-Moſs, Oak-Moſs.

2. The Acerbes, Plantain, Houſe-Leek, Juice of Acacia, Omphacium.

3. The Auſteres, Oak-Bark, Galls, Biſtort-Roots, Terra Japanica.

4. Aromatick Stipticks, Roſes, Spongia Cynosbati, Radix, Rhodiæ, Saunders.

II. *Drawer of Acids.*

1. Tartar Acids, *Cremor Tartari*, Syrup Acetoſellæ, Syrup Lemon, Lime-Juice, Juice of Citrons.

2. Vinoſe Acids, Syrup of Vinegar, or Syrup of Verjuice.

III. *Drawer*

III. *Drawer of Mucilages.*

1. The ſlimy Farina of Linſeed, Starch, and all Meals.
2. Watery Gums, Gum Arabic, Tragacanth, Althea Roots, Elm-Bark.
3. Sweet Oily Mucilages, Oil of Almonds, Walnuts, Linſeed.

IV. *Drawer of Sweet Taſtes.*

1. The Leguminous Sweets, as Liquoriſh.
2. The Nauſeous Sweets, Sena, Linum, Catharcticum.
3. The Stiptick Sweets, Fern-Roots.
4. The ſweet Fruits, as Figs, Dates.

V. *Drawer of Bitters.*

1. The ſmoaky Bitters, Cichory, Carduus.
2. The *Lamium* Bitters, *Hedera Terreſtris, Scorodonia Galeopſis, Marrubium.*
3. The Wormwood Bitters, *Abſynthium, Flor. chamoneli.*
4. The bitteriſh Stipticks, *Terebinthinates*, Balſ. Peru, *Tolu, Gileadenſe, Summitat. Pini, Hypericum.*

5. The

5. The bitter nauseous Vomits, *Vinum Sayllitıcum.*

6. The bitter sweet Aloetics, *Scotch* Pills, Ruffy Pills, *Elixir proprietat. tartariſat.*

7. The nauseous bitter Stiptick, Rhubarb, Dock-Roots.

8. The nauseous Roſe-bitters, Damask Roſes dry'd to infuſe in Water.

9. The nauseous Elder Bitters, Dwarf Elder Roots, Syrup of Buckthorn.

10. The nauseous and *Convolvulus* Bitters, Briony, Jalop, *Hypocacuanhay.*

11. The bitter sweet *Lychni*, *Gentian*, *Centaury*, Buckbean.

12. The Laurel Bitters, green Walnuts, *Syr.* of Peaches.

13. The odoriferous Laurels, Lign. Aloes, Cinnamon, *Cortex*, *Winteranus*, Bayberries, Orange Pills.

14. The acrid Laurels, *Guaicum*, *Gum*, *Guaicum*, *Balſ. polycreſtrum.*

15. The bitter Stiptick, *Febrifuges*, *Cortex peruvianus*, *Cortex ceraſorium nigr.*

16. Bitter Gums, Myrrh, *Olibanum*, Maſtick, Turpentine, *Burgundy* Pitch, Tarr.

17. The bitter Stipticks, *Vulneraıry*, *Veronica*, *Bugula*, *Scabioſe*, *Agrimony.*

18. The bitter sweet nauseous of the Melon-kind, *Trochiſci alhandal*, *Elaterium.*

19. The

19. The bitterish sweet astringent Madders, *Rubia*, *Gallium*, *Chelidon majus*, *Anchusa*.

VI. *Drawer of Aromatics.*

1. The sweet Aromatics, Fennil, Aniseed, Caraway, Parsely Seeds.

2. The sweet *Terebinthinates*, *Calamus*, *Aromaticus*, *Cyperus*, *Juniper*.

3. The fervid Aromatics, *Iris*, *Cardamomums*, *Cubebs*.

4. The bitterish Acrids, Aromatics, *Spir. Flor. Rorismarini*, *Spir. Lavendulæ*, *Sal volatile oleosum*, *Spir. hormini*, *Spir. thymi*, *Pulegium*, *Salvia*, *Rosmarinus*.

5. The Mint Aromatics, Spir. of Mint, Roots of *Dictamnum*, Mint Water Simple.

6. Odoriferous Gums or Rosins, Benjamin, Styrax, Flowers of Ben.

VII. *Drawer of Acrids.*

1. The Cresse Tastes, Mustard-Seed, Spirit of Scurvy-Grass.

2. Acrid Turpentines, *Conyza*, *Enula*, *Campanæ*, Roots of *Potæsitis*.

3. Acrid Gums, *Ammoniacum*, *Galbanum*, Camphir.

VIII. *Drawer*

VIII. *Drawer of Fætids.*

1. Opiates, Poppy-Seed, and Heads, *Diacodium*, *Laudanum liquidum.*
2. Fætid Gums, *Assa fætida.*
3. Fætid Plants, Peony, *Vulvaria*, *Savin*, *Arbor Vitæ.*

IX. *Drawer of Corrosives.*

1. The mucilaginous Acrids, Garlick, Onions.
2. The watery Corrosives, distill'd Water from *Ranunculus Aquaticus* for a Vomit, *Aron*, Dragon-Roots.
3. The Terebinthinate Acrids, *Persicaria acris*, Oil of Terpentine.
4. The Tithymaline Corrosives, *Gutta gamba*, *Euphorbinum.*
5. The nauseous fætid Corrosives, black *Hellebor.*
6. The burning *Diuretics*, as Nettle-Seeds and Hemp-Seeds.
7. The mealy Acrids, as *Sarsaparilla.*

X. *Drawer, containing some Preparations from Vegetables, by Chymistry.*

1. Salts or Ashes, or *Sapo Castilienſis*, or the *Lixivia.* 2. Chy-

2. Chymical Oils, Oil of Aniſeeds, Juniper, Nutmegs.

3. Volatile Salts or Flowers, Flowers, Benjamin.

4. Salſo Acids, *Tartar vitriolatum.*

5. Chymical Tinctures, *Tinct. ſalis Tartari.*

6. Acids or Vinegars, *Acetum Theriacale.*

XI. *Drawer, containing the Animal Medicines.*

1. The Animal Stones, *Bezoar* Stones, *Goa* Stones, Pearls, Bones.

2. Mucilaginous Parts, Horns, Piſſes, Teeth, Iſinglaſs.

3. Bitters, Tinctures of Galls, Eeles, Livers and Frogs.

4. Cauſtic Taſtes, Bees, Cantharides, Woodlice.

5. Salſo Acids, Urine, Sal armoniac.

6. Fætids, Viper Powder, or Viper Wine, Bores Stones, Worms.

7. The odoriferous Civet, Musk.

8. The ſerous Taſtes, diſtill'd Milk.

9. The unctuous Taſtes, Butter, and the Axungias and Fats, *Sperma Ceti.*

The ſweet Taſtes are commonly met with, and need not be preſerv'd, as Milk, Broths, *&c.*

10. The

10. The Chymical Principles from Animals are volatile Salts, and Oils and Aſhes of Animals.

XII. *Drawer, containing the Mineral Medicines.*

1. Stiptick Earths, Bole, Raddle.
2. Gritty Taſtes, Chalk, Marble.
3. Acid Spirit of Sulphur, Salt, Niter, Vitriol.
4. Salſo Acids, volatile Salt, or fix'd Vitriolate, *Sal Catharticum* is a nauſeous, bitteriſh, Salſo Acid.
5. Vitriolics, as Alom, Mercurial, Martial, Stipticks, Saturnine, Vitriols, Venerial, Jovial Stipticks; the Lunar Stipticks are bitteriſh, acrid Vitriols, Solar, ſweet Stipticks.
6. Fætid ſmells of Sulphur, Antimony, Arſenic.
7. Fragrant Smells, as Ambergriſe, Amber, *Petroleum*, which are *Bitumens*.
8. The Calces of Stones or Minerals, which are Stiptick.
9. Cauſtics, Arſenixs, *Lunar Cauſticus*, Oil of Antimony.

I have made this Scheme of a Cabinet for *European* Medicines, to ſhew they are ſuf-

ſufficient for our purpoſe, as well as the *Chineſe* Simples ſerve the Cure of their Pulſes, when preternatural; and the exceeding Pulſes will require the cool Taſtes, and the deficient Pulſes indicate the hot Taſtes; and by this Method we ſhall imitate the *Chineſe* Practice. 'Tis certain, their Experience of this Practice for 4000 Years is much to be valu'd, becauſe they are an Ingenious Nation; but we have at preſent an obſcure Account of it from the *Miſſionaries*, who know nothing of this Art; neither can they dexterouſly diſtinguiſh and ſeparate the *Chineſe* Notions from Matters of Fact, and the real *Phenomena*, to which all Hypotheſes are adapted, tho' they be very abſurd; this muſt be the Buſineſs of ſome Phyſician who has learn'd the *Chineſe* Language, and has long had a full Experience of the *Chineſe* Method of Practice, that he may more clearly deſcribe their Pulſes, and accommodate them to the Names we uſe. The Ignorance of the *Europeans* in the Sphugmatic Science, together with the Hieroglyphick Mode of the *Chineſe* Notions, has hitherto kept us from apprehending the Senſe of what is writ by Dr. *Andrews Cleyer*, whoſe Book fell into my Hands ſince I writ theſe Papers; and when

when I had read it, I found I could apprehend the true Senſe of it; and to gratifie the Curioſity of Ingenious Inquirers, I made the following Extract, and I ſuppoſe my Readers will be pleas'd to Practice according to the *Chineſe* Mode, as well as to adorn their Houſes with their curious Manufactures, and to uſe their Diet of Thea; the *Chineſe* are great admirers of the Antiquity of this Art, and when they miſtake in their Predictions, they impute it to their own Ignorance, and not to any Defect in the Art.

AN
APPENDIX,
CONTAINING

An Extract of the Chineſe *Art of feeling the Pulſe from* Cleyer: *In a Letter to the Honourable* CHARLES HATTON.

SIR,

'I Am very much pleas'd with *Andrew Cleyer*'s Book, which I lately borrow'd of you, and I made the following Extract out of it, which I 'am oblig'd to Preſent to you; not only 'as an Acknowledgment of the Favour 'you did me; but that I might procure

'some Respect to my Design (of explaining the obscure Account of the *Chinese* 'Art) by the great Esteem the Publick has 'for your Learning and Judgment.

In Reading this Book, I reduc'd all my Observations to the following Heads.

1. The *Chinese* Directions for feeling of the Pulse.
2. The Mistakes of the *Chinese* in this Art.
3. The differences of the Pulse observ'd by the *Chinese*.
4. The Alterations of the Pulse by the *Non-Naturals*, and Diseases.
5. The Prognostications by the Pulse.
6. The Cure of the Preternatural Pulses by simple Medicines.

1. The *Chinese* direct the Physician to come to the Patient in the Morning to feel the Pulse, when he is Fasting; and the Physician ought to be Healthful, free from Cares.

After a little Quiet, they direct him to lay the left Hand on a Pillow, and to apply the first Finger of the right Hand above the Joint of the Hand and Wrist, and the second below the Bone, and the third

third below that, and afterwards to apply to the right Arm the Fingers of the left Hand; on the same manner they lay the Hand upwards, and sometimes downwards, in obscure Pulses.

The next thing the *Chinese* direct, is, To observe the three Places of the Pulse; three Places of the Pulse in the left, and the same in the right; and then to consider to what Members each Pulse answers, and to which Region of the Body, and then the Pulse must be examin'd in the Superfices, and middle, or deep, by a different Pressure.

We must next examine whether the Pulses be *Ad extra*, and depends on the *Calor primigenius*, that is, whether the Circulations runs thro' the *Capillairies* in the Superficies of the Body, and be a full Circulation; or else whether the Pulse be *Ad intra*, when it depends on the *Humidum radicale*; and then it moves more slowly in the great internal Vessels to the dominion or mixture of the *Calor primigenius*, and *Humidum radicale*, they impute all Pulses; the *Pulsus natans*, *Crebro acutus Longus* have a threefold primigenical Heat; and these are hot in the Superficies, and inwardly cold from some mixture of the radical Moisture.

The *Pulsus profundus, Raro obtusus brevis*, have a threefold *Humidum radicale*; superficially it appears cold, and internally they say 'tis hot, from a mixture of the *Calor primigenius*.

The plain Sense of all this is, when the Circulation runs outwardly, the Parts within are more cold, and *e contra*; and by the *Calor primigenius* we must understand a great Rarifaction of the Blood and Spirits; and by the *Humidum radicale*, the Condensation of the same.

The *Chinese* advise to observe the Sex, because Men have a stronger Pulse in the upper place of the Pulse, where the Forefinger is plac'd; and a weaker in the third place, where the Pulse of Women is strongest, because in them the *Humidum radicale* prevails, and in Men the *Calor primigenius*; and the *Chinese* say the Pulse in the left Hand is greater in Men, and that of the Right in Women.

If the Patient be a Child, the Pulse is quicker; in a Tall Man 'tis longer than in a short; in a Robust Man thicker, in delicate Persons smaller; in a thin Habit thin, in a Fleshy great, in a strong Man Exundant, in Joy empty, in the Sad full, in a brisk Man quick, in a slow remiss; and

and they obſerve that a different Climate, and different Seaſons, alter the Pulſe.

The two moſt material Things, by which the *Chineſe* judge of the Pulſe, are,

1. The two Cauſes of the Pulſe, the Spirits from the primigenial Heat, or the Spirits of the radical Moiſture, which are Spirits rarify'd or condens'd according to the *European* Notions; and they make three Degrees of theſe, the exceeding, moderate, or the defective.

The Pulſes from the Heat are the ſame as my exceeding Pulſes; the Pulſes from the cool Spirits or radical Moiſture are my deficient Pulſes.

2. The ſecond uſeful Obſervation is the Meaſure of the Pulſe by the Reſpiration, there are naturally four or five Pulſes to one Reſpiration; and this is their meaſure of healthful Pulſes; if there be more Pulſes in one Reſpiration the Pulſe exceeds, and is too frequent; and when 'tis too ſlow or deficient, there are but one, two or three Pulſes in one Reſpiration; in Children the Pulſe is very quick, and they have eight Pulſes in one Reſpiration; in one quarter of an Hour there are 140 Reſpirations in Health, and in the ſame time

not leſs than 562 Pulſes, nor more than 703 in twenty four Hours; they reckon 13500 Reſpirations, and the Pulſes in the ſame time are not more than 67500, nor leſs than 54000; they alway have acknowledg'd a Circulation of Blood and Spirits fifty times in 24 Hours; tho' the Circulation of Blood has been lately fully diſcover'd and prov'd, yet the old *Europeans* had a rude Notion of it as appears in *Plato*, the Account of which is thus tranſlated from Mr. *Dacier*'s, *Pag.* 114, in the Life of *Plato*; he ſays, *The Heart is the Source of the Veins, and the Fountain of Blood, which runs from thence with a rapid Courſe into all the other Parts*; and I may obſerve that his Knowledge in Anatomy was as imperfect as that of the old *China* Books.

The *Chineſe* direct the Phyſician to obſerve after what Number the Pulſe intermits; for if 45 Pulſes ſucceed one another without intermiſſion, or any alteration, that Perſon enjoys perfect Health; and there is in that time nine Reſpirations.

They direct us to obſerve whether the Pulſe deſcends from the natural Temper to a deficiency, or aſcends to an exceeding Pulſe.

2. *I will next give ſome Reflexions on the Errors the* Chineſe *make about the Pulſe.*

I will firſt obſerve, That the *Chineſe* Pictures of the Pulſe are pure Hieroglyphics, and not yet explain'd to us; and their Pictures of the *Viſcera* are no more like them, than the *China* Pictures of Men and Women are like their natural Figures; neither have any Exactneſs; a little Similitude they think ſufficient.

The *Chineſe* are very extravagant in comparing their ſeveral Pulſes to odd Figures and Motions; 'tis true, we want Words for to explain Colours and Taſtes, and we therefore deſcribe them by comparing them to known Colours and Taſtes, ſo it muſt be in the Senſe of feeling; we muſt compare all nice Motions to thoſe that are well known, as that of the Ants motion in the formicant Pulſe, or to that motion like a Worm in the vermicular; but the *Chineſe* Compariſons are ſometimes very extravagant, and the Similitude imperceptible, when they compare the Pulſe to a flying Ribband or Feather; the *Pulſus juſculi ubi pinguedo bullit & notat, a Pulſus niſtar ſtaminis araneæ,* or a Pulſe like the motion of a Cock's Wings;

and

and here I will make this Remark, that all the very nice touching of the Pulſe may be very curious, but not uſeful, becauſe Phyſicians muſt build all their Practice on thoſe ſenſible *Phænomena*, which are obvious to all unprejudic'd Perſons; and thoſe are ſufficient, and very evident, as Nature has made all uſeful Things.

The *Chineſe* believe the Pulſe beats ſtronger in the Left, than in the right Arm; but of this I am not ſatisfied, tho' I have oft found the Pulſe to differ in one Arm from that in the other.

In the firſt place of the right Arm, which is above the Bone of the Joint, they place the Pulſe of the Heart, and ſmall Inteſtines; by which we muſt underſtand the Pulſe of the choleric Tempers, or the exundant Pulſe in Health.

The ſecond Pulſe is below the Bone, and ſhews the Conſtitution of the Liver and Gall; by this Pulſe we muſt underſtand the ſanguine Temper, and the Pulſe is *Chordæ tenſæ ſimilis* in Health.

The third place of the Pulſe is below the ſecond, under the third Finger; and this ſhews the Conſtitution of the Veins and Ureters, by which we may underſtand the phlegmatic Temper; 'tis naturally the *profundus Pulſus*.

In

In the right Arm they distinguish three places of the Pulse, in the first and uppermost is the Pulse of the Lungs, which shews their natural Temper, and that of the great Intestine; this Pulse is naturally *Natans*, and by this we must understand the salt Lympha.

The second place is under the second Finger, and shews the Temper of the Stomach and Spleen; and this Pulse is naturally remiss, and a sign of the phlegmatic Temper.

The third place shews the Temper of the right Kidney, or *Porta vitæ*, which as I apprehend relates to the Genitals; and this is *Profundus*, as the Pulse of the Reins is naturally.

All these Observations are contrary to Anatomy, because all the Arteries arise from the same original part of the *Aorta*; and the Blood must be injected into all Parts alike on both sides; and the different parts of the Artery cannot represent the different Constitutions of the Heart, Liver, Kidnies, Lungs, Stomach, Spleen, Genitals; and the Lungs lie on both sides and not on the right, as well as the Stomach, and they allow the Kidnies on both sides; but this is true, if the Blood moves violently, the Pulse is evident a-

bove

bove the Joint of the Wriſt; if the Blood moves very ſlowly, 'tis felt only in the lower place of the Artery, or moſt there, and leſs in the upper place above the Joynt.

The Circulation and Pulſe muſt be accounted moderate, if the Pulſe appears in the ſecond place moſt evident under the middle Finger; therefore by the application of the three Fingers on either Arm, we may diſcern when the Circulation runs very faſt, or too ſlow, or moderately; and as to the Pulſes on the right Arm, the Pulſe of the Lungs differs only in Degree from that of the Heart, whoſe Pulſe is exundant; and that of the Lungs is *Natans*, that is, leſs exundant; ſo the Pulſe of the Stomach and Liver differ only in degree, the laſt being *Chordæ tenſæ ſimilis*, and the other *Remiſſus*; the Pulſe of the Kidnies are on both Arms *Profundus*; the Liver is a Hieroglyphick for the Blood, the Heart for choleric Blood, the Lungs for the ſalt Lympha, the Stomach for the Pituita, the Kidnies for the Serum; the Pulſes of theſe ſeveral Humours are the ſame as thoſe mention'd for the ſeveral Members; *Exundans* in choleric Tempers, *Chordæ tenſæ ſimilis* in the Sanguine, *Natans* in the Salt, *Remiſſus* in the

Pi-

Pituitous, and *Profundus* in the Serous; and theſe will ſignifie the ſame in both Arms.

The next Error of the *Chineſe* is, That they feel the Pulſe ſuperficially to the Skin and Fleſh, or by a moderate preſſure to the Blood and Spirits, or by a greater preſſure to the Bones; and then from the ſuperficial they infer, that the cauſe of the Diſeaſes is without the Body, in the Skin or Fleſh; by a moderate preſſure they tell whether the Diſeaſe be in the Blood or Spirits; but if the Pulſe appear moſt evident near the Bones, they ſay the Diſeaſe is radicated, or from malignant Spirits; by theſe different preſſures they examine the Pulſes in each Arm, and ſo make nine Pulſes in each Arm.

I obſerve, That we know the great Pulſes by a ſuperficial preſſure; and the ſmall ones muſt be diſcern'd by a deep preſſure, but the moderate by a moderate preſſure; and by the different preſſures we may learn whether the Circulation runs to the Superficies, or more internally; but this cannot diſcover in what part of any diſeas'd Member or Region the Diſeaſe is fix'd; in Apoplexies the Pulſe is great, and yet the external Parts are not affected, but the Brain it ſelf; and in Fe-

vers

vers all Parts are affected both within and without.

The next Error I shall observe is, That the *Chinese* make the three places of the Pulse respect the three Regions; the first Region is from the Head to the Diaphragm, the second from thence to the Navel, the third from thence to the Feet.

All these respects of the Pulse to the three Regions, is contrary to Anatomy; and the Diseases of the several parts have all sorts of Pulses, and may be discern'd in each Arm alike; but this may be admitted, that if we consider the several branches of the Arteries; those which go to the Head and Lungs, and Breast, are neareſt to the Heart; and therefore are first sensible of a violent Circulation, and are known by an exundant Pulse; the celiac Branches of the Artery are in a middle distance from the Heart, and send Branches to all the *Viscera* in the middle Region, and are most affected in a moderate Circulation, and this appears by a moderate Pulse; but the Branches of the Artery to the Kidnies, and Genitals and Legs, which are most distant from the Heart, and must be obstructed by a slow Circulation, or require a violent

lent Circulation to affect them with exceeding hot Humours; in a ſlow Circulation the ſerous Humours ſwell them, and make them cold; in a hot Intempery they are Hot, and Inflam'd, and full of Pain; but the upper part, and then the middle, ſuffer firſt in all violent Circulations. On the contrary, if the Circulation be too ſlow, and the Pulſe ſlow, and weak; firſt thoſe Parts to which the iliac Arteries, and thoſe of the Kidnies reach, are affected or obſtructed; then thoſe to which the celiac Arteries belongs, and afterwards thoſe of the Lungs, and Head; ſo we obſerve in dying Perſons the Circulation fails in the Legs firſt, in the middle Region next, then in the Head, and laſt in the Lungs.

No particular Part can alter the Circulation any otherwiſe than by obſtructing the Circulation by Pain, which convulſes the Veſſels or Humours that obſtruct them, or elſe by too great ſecretion of them in Defluxions; the ſecretion is known by an undoſe Pulſe, and the obſtruction by a hard one; all cold Diſeaſes by a weak ſlow Pulſe, and the hot ones by an exceeding Pulſe; and the uſeful ſecreted Humours return into the Blood, and give their Taſtes to it, beſides all the ſolid Parts com-

communicate with one another in pain by the Animal Spirits in the Nerves and Membranes.

This diviſion of the ſeveral parts of the Artery ſeems uſeful, and we may know to what branches the Circulation tends, by the greatneſs, mediocrity or ſmalneſs of the Pulſe; and if this be approved we muſt reſtore the Inteſtines to the Pulſe of the Stomach, as an Appendix of it, becauſe they depend on the *cæliac* Artery.

The next Obſervation I ſhall make, is, That the *Chineſe* believe the Diſeaſes of each ſide are evident in the Pulſe of the ſame ſide; but they erroneouſly place the Lungs and Stomach on the right ſide, and the Heart and Liver on the left, as well as their Pulſes; but ſince the Arteries join'd on each ſide in the ſame Original Trunk, the Diſeaſe will appear alike in both Arms; yet this muſt be allowed as true, we bleed moſt ſucceſsfully in the ſame ſide the Pain is, which ſhews that the Veins and Arteries are more obſtructed on one ſide than on the other, which may alter the Pulſe on the ſame ſide the Diſeaſe happens; and we find the Pulſe is alter'd in ſome diſeaſed Parts by Inflammations without affecting the whole.

The

The *Chineſe* have corrupted their Art of feeling the Pulſe by mixing their Philoſophy of the five Elements with it, as from Water Trees are produc'd, from Trees Fire, from that Earth, from Earth Metals, from Metals Water again; ſo from the Reins the Liver is generated, from that the Heart, from that the Stomach, from thence the Lungs, from them the Reins. And ſome property of theſe Elements they attribute to each Member; to the Heart Fire and Bitterneſs, which appears moſt in Summer; to the liver Spirits and Acidity which appears in the Spring; to the Lungs an Acrid or Aduſt Taſte, like that of Metals; and this appears moſt in Autumn to the Reins and Ureters the nature of Water, which is moſt common in Winter; to the Stomach and Spleen they aſcribe a ſweet Taſte, and they compared them to moiſt Earth; they ſay the Reins communicates their Qualities to the Liver, the Liver to the Heart, and the Heart to the Stomach, *&c.* And they farther purſue their Philoſophic Cant, by making the ſeveral Members, Mothers, and Sons, Friends and Enemies to one another, as may be ſeen in *Cleyer*.

The beſt Senſe of all this is the deſcription of the ſeveral natural Tempers, or Cacochymias.

I will farther obſerve, That the *Chineſe* have corrupted this Art by mixing Aſtronomical Obſervations with thoſe of the Pulſe; they believed there is a Circulation of Blood and Spirits in twenty four hours, and that their imaginary Circulation of the *Calidum* and *Humidium Radicale*, correſponds with the Circumvolution of the Heavens; they ſay the Circulation is performed fifty times in twenty four hours, and in the ſame time the Heavens move thro' fifty Houſes; but we know all this is a miſtake, becauſe the Blood circulates once in three or four minutes.

They make twelve ways of the primigenial Heat, and of the *Humidum radicale*, ſix upwards and ſix downwards, all which ſeems very Phantaſtical; unleſs they underſtand by this, that the ſeveral ſix Members and the ſix Appendices communicate their Cacochymias to ſeveral Parts; ſo the Choler and the Æruginoſe Humour is communicated to the Spit, Urine, Stools, Vomits, and in the ſolid Parts it produces an Eriſipelas, in the Head, Madneſs, Deafneſs, and there muſt be ſo many ways of the ſalt Humour and Choleric. And if

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it be objected, That their miſtakes in Anatomy will make the *Chineſe* Art fallible.

I may anſwer, That the want of Anatomy does make their Art very obſcure, and gives occaſion to uſe phantaſtical Notions; but their abſurd Notions are adjuſted to the real Phænomena, and their Art is grounded upon curious Experience, examined and approved for four thouſand Years.

1. By the Pulſes of the ſeveral Members which are natural, they know the ſeveral Conſtitutions, and by meaſuring the Pulſe by one Reſpiration they know a healthful State.

2. By the frequent Pulſes in one Reſpiration they know the exceeding Pulſes, and by the rare Pulſes in the ſame time they know the deficient, and both ſhew the Cacochymias.

3. By the Pulſes *ad extra* they know the Pulſes depending on Heat, or Rarifaction of the Blood and Humours; and by the Pulſes *ad intra* they know the condenſation or coldneſs of the Blood and Spirits.

4. By the Pulſes in the firſt place of the Arm if *exundunt* they know a large full Circulation, and by the lower

place where the Pulſe is *profundus*, they know a weak ſlow ſmall Circulation.

5. By the reſpect of the three Places to the three Regions, they know to what Region the Circulation tends moſt, and by the different preſſures of the Fingers they conjecture to what part of the Region the Cacochymia tends; and they affirm, That Heat produces frequency, celerity, greatneſs, and cold, ſlowneſs, rarity and ſmallneſs in the Pulſe.

6. They acknowledge all our Pulſes, and have made more nice diſtinctions than the *Europeans*.

3. *I will next deſcribe the differences of the Pulſe obſerved by the* Chineſe.

The Pulſes produced *ad extra* are ſeven, and they depend on the Primigenial Heat, and then are our exceeding Pulſes from Rarifaction of the Blood and Spirits.

1. Exundants like Water flowing violently out of a Pipe; this is a very great Pulſe and vehement, this indicates Pain and Heat, and depends on extreme hot Spirits in an Ebullition or Putrefaction of the Blood, as in Fevers, the *Pulſus natans* and *exundans* indicates Madneſs, or malignity of Heat.

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The *exundans* and *magnus* indicates a malignant hot Fever.

This Pulſe is very much elevated, and appears in the heat of Summer; the *exundans* in the upper place indicates Heat in the Breaſt, in the middle place of the Pulſes, vomiting, in the lower, bloody Urine, or pain of the Feet.

2. The intenſe Pulſe is great and frequent, and 'tis like to a thick Cord, not to a ſtretched one, and 'tis alſo *exundant* like a Torrent; it indicates a *Delirium* from a Wind riſing to the ſupreme Parts; this Pulſe is the quick great Pulſe from Rarifaction of Humours and Spirits, and it is from a hot Wind, ſuch as is in Ephemeras.

A Pulſe intenſe and very quick indicates reſtleſsneſs.

This Pulſe indicates want of Perſpiration, a Cough, a Flux, drinking cold Water; this ſeems the Pulſe in Defluxions, and it indicates both hot and cold in the Body, if it be intenſe and frequent.

The Pulſe *natans* and *magnus* indicates a Wind in the Head, with heavineſs and ſtoppage in the Noſe.

The Delirra and Melancholic Fevers are indicated by this Pulſe, becauſe they depend on hot Winds.

If the intenſe Pulſe be frequent and *chordæ tenſæ ſimilis* in three places, it indicates a Wind in the upper Parts, in the firſt place Head-ach, and in the ſecond Pain.

3. *Pulſus Crebro-acutus*, this is compared to the Motion *gemmæ rotundæ*, and it indicates Pains in the Hands and Feet.

If this Pulſe be frequent it indicates a *vacuum* and heat in the Heart.

If *natant* it indicates a Wind, Pain, Fear.

Pulſus acutus indicates a Diſeaſe in the Mind.

Pulſus Crebro-acutus celer indicates Cold in the Belly.

Remiſſus Crebro-acutus indicates Heat within.

This Pulſe in general indicates a weak Primigenial Heat.

This is a quick and frequent Pulſe, ſuch as is in Hyſterics and Hypochondriacs, whoſe ſeveral Symptoms it indicates; the Spirits are weak, and the Blood hot. This Pulſe I would appropriate to Atrabilarian Cacochymias, being quick, weak and frequent, if without a Fever.

4. The *Pulſus natans* ſeems to me the great undoſe Pulſe; 'tis thus deſcribed, *digitum infra natat*, it indicates a hot Wind, Head ach, red Eyes, Coughs, from a great Rariſaction of Humours.

A *natant* Pulſe, if quick, indicates a malignant Fever.

A *natant* Pulſe and remiſs indicates hardneſs of the Skin, and a cold Wind in the Fleſh.

Natans and *Crebro-acutus* indicates a trouble from a remiſs Wind.

Natans Crebro-acutus celerimus indicates Indigeſtion.

Natans brevis indicates that the Lungs are injured, and ſhort Breath.

Natans and *Frequens* indicates Matter within.

This Pulſe, I think, belongs to the Catarrhal Salt Lympha, or Salt Cacochymia, or ſaltneſs of Blood, with a windy Rarifaction of it.

5. The *pulſus plenus in extremis in medio vacuus*, this indicates Hæmorrhagies, 'tis like the *natant* Pulſe, great and ſoft, 'tis compared to the feeling the leaf of an Onion; it appears full in the ſides, but hollow in the middle, a full Pulſe in the firſt place 'tis a ſign of redneſs in the Face, and Wind.

This Pulſe in the firſt place indicates fulneſs of Blood in the Breaſt; in the ſecond it indicates a Tumour and Palſie; in the third place emptineſs in the Bladder, red Urine, red Flux.

6. The *plenus Pulſus* appears very full without altering upon contraction of the Artery, *Dominatur cadenti calori primigenio*; in the firſt place of the Pulſe it indicates Heat in the Breaſt, Wind, red Face; in the 2d place Pain of the Heart; in the 3d Fluxes of Urine and Stool ſtop'd; this full Pulſe muſt be in *Plethoras*; the exundant, and full and great Pulſe are ſigns of Convulſions; the Pulſe of the Liver, ſmall and quick, indicates the ſame.

7. *Pulſus chordæ tenſæ ſimilis*, 'tis repreſented as a great Pulſe, long like a Spear.

If this Pulſe be *Obliquus*, it indicates a Pain in the ſide.

This Pulſe, if it be *Celerrimus*, indicates Pains in the Stomach.

If it be *Parvus*, it indicates a diſperſion of Cold.

If it be *Frequens*, it indicates drinking Water cold.

If it be *Intenſus*, it indicates Pains of the ſides, and a gathering of Blood by Cold.

If it be ſlow, uſe warm Medicines; if frequent, procure Sweat.

This Pulſe *Intenſus*, ſeems to be our full hard Pulſe, and indicates Pains in the Breaſt,

Breaſt, if intenſe in the firſt place of the Pulſe; but in the ſecond Water, and cold in the Belly; and this is the hard Pulſe in Dropſies from Obſtruction of the Artery or Compreſſion, or by ſizy Humours.

All theſe riſe high in different Degrees; firſt the *Exundans*, next the *Intenſus*, then the *Crebro acutus*, the *Natans*, the *Pulſus plenus in extremus*, the *Plenus*, the laſt *Pulſus chordæ extenſæ ſimilis*; all theſe are higher than the Natural, (*Cum elevatur habet nimium, ſicut Pulſus excedens, habet naturam caloris primigenii*) and I call all theſe exceeding Pulſes, and the great ones.

Note, That the *Chineſe* obſerve the contraction of the Artery, in deſcribing the acceſs and receſs of the Artery; but they make no uſe of that Obſervation in Practice.

Sweating is a ſign of an exterior Pulſe, and *odium venti*.

The Pulſes, *ad extra*, are appropriated to the left Hand, becauſe there the Pulſe is greateſt, tho' they appear in the right as *Hoſpites* ſometimes.

Si extempore, vento frigore morbus accedat, eſt ad extra; that in the Pulſes *ad extra* depend on external Heat and Cold of the Seaſons of the Year; Heat and Wind rarifies

rarifies the Humours, and Cold ſtops the Pores; by both the exceeding Pulſes are produc'd.

Theſe are the eight Pulſes, ad intra, *or the deficient Pulſe.*

1. The *Parvus*, which appears to come and recede very little, and indicates the want of Blood and Nutriment in the ſmall Inteſtines, and drineſs of the Body, and the *Fluxus albus.*

In the middle place of the Pulſe it indicates the Spirits, tend upwards, and are condens'd; coldneſs of the Body, and Hiccup by drinking cold Water.

The ſmall, weak, and *Raro obtuſus*, are ſigns of ill Digeſtion.

The *Pulſus parvus natans* indicates ſome Diſeaſe in Autumn.

By the ſmall Pulſe we diſcern the ſmalneſs of the Artery, and ſmall quantity of Humours, or the want of their Rariſaction in the ſeveral Parts.

2. The *Pulſus profundus*, if we preſs it lightly, it appears like putrid *Goſſipium*; 'tis little elevated, it appears in fat Perſons, and indicates Coldneſs in the Extremities, or emptineſs of Humours, or Water in the Body.

In

In the firſt place of the Pulſe it indicates Water in the Breaſt, in the third fulneſs in the Feet, and various colour'd Urine like Matter, and fulneſs and diſorder in the Mind; if it be weak, it indicates Vacuity and Fear.

If *Chordæ tenſæ ſimilis*, it indicates Pain by Drink.

If it be *Tardus*, it indicates a cold Diſeaſe in the Stomach; if ſmall and weak, it indicates Cold, and few Spirits.

If it be *Creber*, it indicates Pain in the *Scapulæ*.

If *Dupliciter profundus*, it intimates hardneſs and heavineſs in the Hands and Feet.

Note, By this Pulſe we diſcern the ſerous ſtate of Humours, when they affect the Head, Breaſt, Stomach, Fleſh, Kidnies and Feet; and theſe are the *Viæ humidum radicalis*, this is our low Pulſe.

3. A remiſs Pulſe, is when it is ſmall and ſlow; this is contrary to the intenſe, which is great and frequent, this indicates cold and condens'd Spirits; the Ears tingle, and the Spirits are watery.

In the ſecond place of the Pulſe the Nerves of the Back are affected. In the loweſt place the Belly is affected with great Cold.

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4. The *Pulſus tardus* requires a great compreſſion of the Fingers, becauſe 'tis much hid; it ſignifies watery Diſeaſes, Vacuity, Inquietude.

In the firſt place of the Pulſe it ſignifies a malignant Fever.

In the ſecond place it ſignifies a Pain in the Stomach from Drink.

In the third place it indicates heavineſs in the Reins, and Feet, and a chilneſs, tho' oppreſs'd with Cloths.

The *Pulſus tardus* generally indicates Cold, or ſmall Rariſaction of Humours.

If it be *Raro obtuſus*, it indicates want of Blood; if it be remiſs, it indicates a *Vacuum*; if exundant, it indicates Spirits and Heat; if intenſe, it indicates Cold; if *Chordæ extenſæ ſimilis* and *Frequens*, it indicates a Diſeaſe, *Frigido calidum*.

The frequency indicates much Heat, the ſlowneſs of the Pulſe much Cold.

If this Pulſe be ſmall, it indicates Vacuity, if intermitting, it indicates Death.

If *Chordæ extenſæ ſimilis* in the Gout, it indicates a Wind.

Note, That all the Pulſes, *ad intra*, are moſt appropriated to the right Hand, becauſe there the *Chineſe* ſuppoſe they are ſlower, but they appear in the left as *Hoſpites*;

pites; if a Diſeaſe comes from Sicucity, Humidity or Heat, it makes the Pulſe *ad intra*; Heat by large Perſpiration weakens the Pulſe, Moiſture oppreſſes it; external Sicuity makes the Humours viſcid; all theſe Cauſes make low Pulſes.

5. The *Pulſus raro obtuſus*, in elevation 'tis little; it appears empty before, and full behind.

In the lower place of the Pulſe it indicates Pain in the Extremity, want of Blood, much Cold; if a Woman conceives it indicates ſome Pain, without Conception, it indicates Weakneſs, and deſtruction of Blood, and Wind below the Navel; this ſeems to me the Pulſe of the cold Melancholics, as the *Crebro-acutus* is of the hot.

6. *Molli ſubtilis*, it indicates few Spirits, coldneſs in the Extremity, noiſe in the Ears; an inward Heat affects the Heart and Inteſtines.

In the firſt place of the Pulſe it indicates Sweating in the Feet.

In the ſecond place paucity of Spirits, and weakneſs in the Mind.

In the third place it feels like Cotton, and indicates a malignant Cold in the Fleſh and Bones.

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In this Pulſe the Artery muſt feel ſmall and ſoft from few Spirits, and little Blood; this is our ſoft Pulſe.

7. *Debilis*, this Pulſe feels like putrid Cotton, 'tis perceptible by a ſmall preſſure, and diminiſh'd by it; it indicates the ſwelling of the Face, and a malignant Wind; in the firſt place it indicates the want of Heat, in the ſecond multitude of Spirits, in the third Perſpiration deſtroy'd.

8. *Cadens Pulſus*, this appears below the three places; 'tis obſcure, and does not return in the interval of one Reſpiration; it indicates Poiſon, Weight, or coldneſs in the Extremities, Cough, Indigeſtion.

In the firſt place it indicates ſome Collection of Spirits in the Breaſt, in the ſecond place Indigeſtion, and failing in the Eyes; in the third place Indigeſtion, or troubled Sleep, weakneſs in the Loins.

I will here place a Table of the *Chineſe* Pulſes according to their Contrariety to one another, and their different Cauſes.

In the old Book of *Nuy Kim*, the Pulſe *Chordæ extenſæ ſimilis*, and the *Intenſus* are alike; the *Raro obtuſus* is the ſame as *Tardus*, the *Natans* as *Plenus extremis*; the *Profundus* and *Cadens* alike, as well as the

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Exundans and *Plenus*, the *Molli ſublilis* and *debilis*.

The learn'd *European* in *Cleyer* reduces all the Pulſes to ſix, the *Natans frequens, crebro acutus*, which indicate Heat; and the *Profundus tardus, raro obtuſus*, which indicate Cold.

Theſe Pulſes from Heat.

1. *Pulſus exundans*, or *plenus*.
2. *Pulſus intenſus*, or *Chordæ extenſæ ſimilis*.
3. *Crebro acutus*, or *frequens* and *celer*.
4. *Natans*, or *plenus in extrenus in medio ruptus*.

Theſe Pulſes from Cold, or radical Moiſture.

1. *Profundus*, or *Cadens*.
2. The *Remiſſus*, or *Parvus*.
3. *Raro obtuſus*, or *Tardus* and *Rarus*.
4. The *Molli ſubtilis*, or *Debilis*.

In the higher places of the Pulſes are the hot Pulſes moſt, and in the lower places the cold Pulſes, in the middle places are the moſt Temperate; this indicates good Health, a moderate Circulation, and an equal diſtribution of Blood and

and Spirits; in the exceeding Pulſes the Circulation exceeds outwardly, and it runs to the Extremities moſt, as to the Head and Feet; but in the deficient Pulſes the Head is oppreſs'd, the Feet cold, and ſwell, and the Circulation runs inwardly in the great Veſſels, and leſs in the Extremities.

Note, That the *Chineſe* Deſcriptions of their Pulſes are confus'd, obſcure, which demonſtrates the Ignorance of the Tranſlators; and the *Chineſe* diſtinguiſh the Pulſes by comparing them to ſomething that feels like them; and they who will know their Meaning, muſt diſcern the ſame by a long Experience in feeling of the Pulſes; for they do not conſider the Pulſe as Geometricians do by its Dimenſions.

4. The next Obſervation ſhall be concerning the Pulſe of the ſeveral Conſtitutions, and the different Seaſons of the Year, and the Pulſe belonging to each Element.

1. The Pulſe of the Reins (or of the ſerous Conſtitution) is naturally *profundus*, 'tis compar'd to Hair dip'd in Water; if compreſs'd, it ſeems to exceed; the contrary Pulſe is remiſs and languid; this

Pulſe

Pulse indicates the Heart to be overcome by watery Veins, that is, by a serous Cacochymia, in which too much cold Humidity abounds; this Pulse is felt in the lowest place in both Arms; to the Reins are joyn'd the *Ureters*, *parta vitæ*, or Genitals, and lowest part of the Body, as an Appendix.

2. The Pulse of the Liver (or sanguine Constitution) is *Chordæ extensæ similis longus*; the contrary is *Natans brevis*, the Galls is an adjunct Intestine to the Liver; this Pulse is felt in the second place in the Artery in the left Hand.

3. The natural Pulse of the Heart (or choleric Tempers) is exundant, that is, great and vehement, the contrary is *profundus*; this is felt in the upper part of the left Arm, and shews great Heat, and bitterish Humours.

4. The natural Pulse of the Lungs is *Natans ligni instar fluctuanus*, or *Raro obtusus*, like Rain falling on Sand; this Pulse is *Natans rarus brevis*, the contrary Pulse *Exundans magnus*; by the Pulse of the Lungs the salso acid Lympha is indicated, which abounds in Catarrhs and Rheums, Coughs; this Pulse is plac'd in the upper place of the right Hand.

5. The natural Pulſe of the Stomach and Spleen (or the Phlegmatic and Melancholic Cacochymia, is remiſs and languid; the contrary *chordæ extenſæ ſimilis frequens*; the Pulſe of the Stomach is compared to Willow Leaves blown with the Wind; the Stomach is reckon'd as the Inteſtine of the Spleen, every Member has its Inteſtine, that is, its ſecretory Veſſels, and this Pulſe appears in the ſecond place of the Right Hand.

6. The Pulſe of the *porta vitæ* is the ſame as that of the Rein or ſerous Conſtitution; to this is aſcribed the Nature of extrinſic Fire and Water.

The differences according to the ſeveral Seaſons.

The Spirits in the Spring are tepid, in Summer hot, in Autumn moderate, in Winter cold.

In the Spring the Element of Air or of Trees prevails, and the Liver then prevails, and the Pulſe is *extenſæ chordæ ſimilis*.

In Summer the Heart and Fire prevails, and the Pulſe is *exundant*; at the end of every Seaſon the Earth and Stomach prevails, which makes the Pulſe ſlow and remiſs.

In

In Autumn the Element of Metals prevails, and then the Lungs prevail alſo, which makes the Pulſe *natans*, *brevis*, *parvus*, *raro obtuſus*.

In Winter the Water and *veſica* have the pre-eminence, and the Pulſe is *profundus*, *ſubtilis*.

The *Chineſe* aſcribe to every Element three Pulſes.

To the Element of Metals, *natans*, *raro obtuſus debilis*.

To the Element of Trees or Air, *chordæ tenſæ ſimilis*, *Intenſus*, *cadens*.

To the Element of Water *crebro-acutus*, *profundus*, *molli ſubtilis*.

To the Element of Fire, *in extremis plenus in medio vacuus*, *plenus*, *exundans*.

To the Earth, *parvus*, *remiſſus*, *tardus*.

The inequality of the Elements produce Diſeaſes, and the inequality of Seaſons.

5. I will next proceed to the alteration of our Pulſes in Diſeaſes.

The *Chineſe* attribute the Pulſe to theſe two Cauſes, *calidum* and *humidium radicale*; the Spirits are the Vehicle of the Heat, and the Blood of the *humidium radicale*, or Cold. From a due mixture of theſe communicated to the Parts, Life and Health depends, and in the exceſs or

defect Death, and the Pulse varies with both. In Spring the Heat increases, and is greatest in Summer.

In Autumn the radical moisture increases, and is greatest in Winter, the Blood is the Vehicle of both.

1. The *Chinese* impute their Diseases to a *vacuum*, or *repletion*, or *pulsus vacuus*, or *plenus*, which are the exceeding and deficient Pulses.

2. To a contrary Pulse or Quality which the natural cannot conquer, this they call *vitium latrocinii*.

3. To a Pulse which the natural can conquer, which is *vitium exiguitatis*.

4. If the natural Pulse be more intense or remiss 'tis *vitium rectitudinis*, that is soon reduced.

Wind is called the *eause vacui*, Diet of repletion, the *vitium exiguitatis* is from weak Spirits or Cold; the *vitium latrocinis* from Humours and Cold, and is Mortal.

The six places of the Pulse have twelve ways or fountains of the Members and Intestines, and one natural Pulse to each.

The health of the Members is known by the celerity, and that of the Intestines by the slowness of the natural Pulse; the natural Pulse of any Part may have ten

sorts

ſorts of changes, the five Members and their Inteſtines being changed twice five times by five vitious Pulſes, *viz.* the *vacuus*, *plenus*, *latro*, *exiguus*, *rectus*, the *duri-ties* is from Heat, and makes a great Pulſe, *molleties* from Cold, and makes a ſmall; the ſoftneſs ſhews the fault of the Inteſtines, and the hardneſs of the Members which being joyned to the five vitious Pulſes, double their number to ten.

All the ways of the primigenial Heat produce Heat, and the ways of the radical moiſture Cold.

By the ſlowneſs of the Pulſe we find cold Spirits are produced, and vacuity, and cold Winds, by the celerity we know repletion, by velocity Heat, by which hot Winds are produced.

Every Member has its natural Pulſe, and præternaturally the Pulſes of the other Members happens in its place.

In the firſt place of the Pulſe, if the Pulſe be *celerrimus* 'tis a ſign of Headach.

If it be *tenſæ chordæ ſimilis*, it ſhews a defect of Circularion to the lower parts, and pain in the Head.

If it be intenſe it indicates pain in the Belly, and the gathering of Spirits.

If it be remiſs it indicates a ſtupor in the Skin, and horror of the Hair.

If ſmall, it indicates cold in the middle of the Breaſt.

If frequent, it indicates Heat in the Orifice of the Stomach.

A *natant* Pulſe in the firſt place indicates Wind and Head-ach; in the ſecond it indicates vacuity in the Belly; in the third place it indicates Wind in the Lungs, Obſtruction of the Belly.

If *crebro-acutus*, 'tis a ſign of repletion.

If *raro obtuſus*, 'tis a ſign of few Spirits, and obſtructed Sides and Breaſt.

If it be only *exundant*, 'tis a ſign of no malignity.

If *profunde* the Breaſt communicates pain to the Shoulders.

If the Pulſe be in *extremis plenus in medio vacuus*, it indicates pain at the Heart, and uneaſineſs from dryneſs and redneſs of the Face, if it appears in the ſecond place; but in the firſt it indicates vomiting of Blood.

In the ſecond place of the Pulſe, *Pulſus natans* and *reuſiſſus*, indicates want of Meat.

Pulſus intenſus trahentis inſtar, indicates repletion of the Spirits, and quick Breath, of hard Cure.

A Debility with a frequent Pulſe indicates Heat in the Belly.

Ten-

Tenſion in the Pulſe *crebro-acutus* indicates Cold in the Belly.

Pulſus parvus indicates fatneſs of the Heart, by which it is oppreſſed.

Pulſus profundus indicates an Acidity in the Meat riſing up the Breaſt.

The *pulſus mollis*, *raro obtuſus*, *debilis*, *ſubtilis*, are ſigns of vacuity.

The *pulſus ſubtilis* is from *humidum radicale*, it feels like Cotton, and is a very ſmall Pulſe; it indicates Cold within, and weakneſs and pain in the Legs.

If the long Pulſe appears in three places like a Spear, 'tis from Heat; it appears in the Spring, and indicates reſtleſsneſs.

In the third place of the Pulſe, the Pulſe *crebro-acutus* indicates ſome diſturbance in the Womb.

Pulſus cadens is a ſign of ſome Indigeſtion in Meat.

A ſmall Pulſe indicates pain in the Belly without remiſſion.

Pulſus debilis indicates Obſtructions in the ſuperior Parts, which cauſe Heat in the Belly.

Pulſus tardus indicates coldneſs in the inferiour Parts.

Pulſus raro obtuſus indicates Vomiting.

Pulsus chordæ tensæ similis, & trahentis indicates a Disease in the Stomach from *humidum radicale.*

Pulsus intensus indicates pain in the Stomach.

Profundus indicates the seat of the Disease in the Reins.

Mollis dibilis frequens natans plenus in extremis, in medio ruptus, all these appear in Bloody Urine.

The Pulse in a malignant Fever from Heat, is *natans creber*; from Cold, *debilis mollis subtilis.*

If in the third place there be an *exundant* Pulse, and *chordæ tensæ similis,* it indicates great Heat, and no Sweat; and 'tis without hope; if in the third place the Pulse be *chordæ tensæ similis,* and *profundus,* it indicates a Distemper in the Stomach, and stop of *menstrua.*

If in the right Hand the Pulse is exundant, in the third place it indicates a Conception in a Woman; if it be exundant in the first place where the *Calor primigenius,* it indicates the Conception of a Male; if in both Hands the Pulses be exundant, it indicates the Conception of Male and Female; if the Pulse be *Crebro-acutus,* and *Celer,* it indicates a great commotion

motion of Blood and Spirits, and that the Conception is of ninety Days.

A frequent Pulſe in the three places of the Arm is a ſign of great Heat.

The preternatural Pulſes of the Via Cordis, *or of the choleric Cacochymia.*

If the Heart has a full and great Pulſe, it indicates Wind, and burning Pain in the Head and Face, and its Redneſs.

If the Pulſe of the Heart be ſmall, it indicates Coldneſs, Vacuity, Fear, and both Cold and Heat.

If the Pulſe be full and great, and *Crebro-acutus*, it indicates Garrulity.

If the Pulſe be *Crebro-acutus* only, it indicates Heat.

If the Pulſe be *Raro obtuſus*, it indicates want of Strength, and Speech little.

If the Pulſe be *Profundus intenſus*, it indicates Pain from Cold in the Heart.

If the Pulſe of the Heart be very quick, it indicates Pain in the Inteſtines, and Obſtruction in them.

If the Pulſe be *Chordæ tenſæ ſimilis*, it indicates Celerity of the Heart without danger.

If

If the Pulſe be in *Extremis plenus in medio ruptus*, 'tis a ſign of vomiting Blood, or Purging of the ſame: In the ſecond place of the Pulſe it indicates Pains of the Heart, Reſtleſſneſs, redneſs of the Head and Face.

The Pulſes *ad Extra*, or *ad Intra*, if they fall into the firſt place where the *Calor primigenius* reſides, it indicates the different degrees of Circulation; an exundant Pulſe is a ſign of a great and vehement Circulation in choleric Tempers; but if the Pulſe be ſmall, *Raro obtuſus, profundus*, 'tis a ſign that the natural exundant Pulſe and Circulation is deficient; if the Pulſe be *Magnus plenus crebro-acutus celerimus*, it indicates a quicker Circulation than the exundant is naturally.

The *Pulſus magnus natans chordæ tenſæ ſimilis*, indicates, That the Liver produces a Wind in the Heart, that is, the Rariſaction of Humours, and the Circulation is leſs than in the choleric Tempers.

'Tis the *Chineſe* Hypotheſis, that the three places in both Arms reſpect the ſix Members; and 'tis true, that the three places indicate different degrees of Circulation; and as the Pulſes *ad Extra*, or *ad Intra* fall into thoſe ſeveral degrees, ſo they indicate differently, all which is ſuc-

cinctly

cinctly represented in *Cleyer*'s Tables of Pulses, *ad Extra*, and *ad Intra*; by the Hearts Pulse coming into the place of the Liver, and that into the Hearts, or the *Vesica*, Lungs, Stomach, Pulse into the place of the Heart; the mixture of the several Cacochymias is describ'd, so the Serum and choleric Blood are mix'd in the first place, when the *Vesica* invades the Heart; the salt Limpha is mix'd with the Blood, when the Pulse of the Lungs comes into the place of the Liver; the Stomach invades the place of the Liver, when the Phlegm and Blood are mix'd, and when one Pulse expels another, one Cacochymia changes into the other, so the Serum, by a high Circulation becomes Blood, the Blood choleric, salt; and these by a slow Circulation become Phlegmatic and Serous again; *Ab Arboribus vincitur metallum*, the salt Limpha is temper'd by Blood, when pure; *Ignem vincit aqua* much *serum* oppresses the Choler, and dilutes it; *Metallum superat ignis*, Heat encreases the salt Humour; *Terra superat Arbores*, the Chyle oppresses the Blood; *Aqua superat terram*, the Serum damnifies Digestion.

Preternatural Pulses of the Liver, or *via hepatis*, or sanguine Constitution.

If

If the Pulse relating to the Liver be *Chordæ tense similis* in three places of the Pulse, the Blood abounds too much, Tertians and Anger infest us.

The *Pulsus mollis*, and *Chordæ tensæ similis* is natural, and the Heat is Temperate like that in the Spring.

An intense Pulse indicates a small Affection in the Nerves.

If *subtilis natans magnus plenus*, it indicates red Eyes.

If the Pulse of the Liver reaches above, the middle place it indicates obscurity in the Eyes, heavines in the Head, pain in the Nerves.

The Pulse in *Extremis plenus in medio vacuus*, indicates obscurity in the Eyes, and vomiting Blood, swelling in the Hands and Feet, impotency of Walking.

The *Raro obtusus* indicates vacuity of Blood, and obstruction in the Sides.

If *Crebro-acutus*, it indicates Heat in the Blood, or Head and Eyes.

If it be *Intensus plenus*, or *profundus*, it indicates a Tertian, Indigestion of Meat.

If *Tensæ chordæ similis*, and *Intensus plenus*, or *Profundus*, it indicates Tertians, Indigestion of Meat, Obstructions.

If

If ſmall, weak, natant, it indicates weak Spirits, obſcurity in the Eyes.

If very natant, it indicates weakneſs of Nerves, want of Strength, and Palſy in the Extremity.

Many and quick Pulſes indicate Heat, few and ſlow indicate Cold.

To the firſt place of the Pulſe the *Calor primigenius* belongs, to the lower place of the Pulſe the *Humidum radicale.*

If the Pulſe, *Chordæ tenſæ ſimilis*, be in the place of the primigenial Heat, the Head-achs.

If the *Pulſus chordæ tenſæ ſimilis* be in the place of radical Moiſture, there is Pain in the Stomach.

If the Pulſe be frequent in the place of the primigenial Heat, the Head-achs, and Vomiting accompanies it.

If in the place of the *Humidum radicale* the Pulſe be ſmall, it indicates a Flux, and noiſe in the Belly from Wind.

A full Pulſe in the place of the primigenial Heat is a ſign of Redneſs in the Face, and Wind.

A ſmall Pulſe in the place of the *Humidum radicale* by Sweat ſtop'd, indicates a Reſtleſſneſs.

A ſmall, weak, natant Pulſe in the place of *Calor primigenius* is a ſign of Cold.

A frequent Pulſe in the place of the *Humidum radicale*, indicates Heat in the Stomach, and fœtid Mouth in the ſame place, *Pulſus acutus creber* indicates Indigeſtion.

A Pulſe great, full, *Crebro-acutus*, indicates Garrulity, if in the place of the *Calor primigenius*.

If the Pulſe of the Heart and Liver be *Profundus*, 'tis a ſign of Flux of Blood downwards, and of Heat and Death the 7th Day.

Note, That there are two ſorts of preternatural Pulſes; thoſe, *ad Extra*, from primigenial Heat; thoſe, *ad Intra*, from radical Moiſture; and in deſcribing the *via Cordis*, *hepatis*, *veſicæ*, as theſe Pulſes happen in the three different places, they indicate the ſeveral Parts affected by that Cacochymia, either cold or hot, as the Pulſe indicates.

Since the *Chineſe* do not uſe the Pulſe in diſcovering the Diſeaſes of Children, they obſerue the Red, Blue, Pale, Yellow, Black Colours in their Faces, and their different Habits.

Lean, Fat, Delicate, the Temper of the Mother, or Born in the Ninth, Tenth Month, which laſt is ordinary, and moſt perfect; they alſo obſerve the Heat and Cold

Cold of the Fore-head, and from Heat a Wind is produc'd, and Cough from cold Vomiting, Purging; they feel the Pulse by one Finger, in a Child above Five; and if he has six Pulses in one Respiration, they believe him in Health.

Tho' the *Chinese* allow of the Circulation, yet their Application of it is very Phantastical; for they imagine that it begins from the Center towards the way of the Lungs; and from thence to the way of the great Intestines, so to the way of the Stomach, then to the way of the Spleen, Heart, small Intestines, Ureters, Reins, *Pericardium*, third part of the Body, Gall, Liver, where it ends; they derive the *Humidum radicale* more or less intense from the six principal Members; but from the six ways of the less principal Members, they derive the primigenial Heat, being more or less intense, and the ways of the *Humidum radicale* are more inward, and in the fore part of the Body; the ways of the Heat are outward, and in the hinder part of the Body.

There is a Path assign'd to the twelve Ways, whereby one Member communicates with the other, to which it has some Relation.

To

To the Circulation the *Chineſe* aſſign eight extraordinary ways.

All theſe ways muſt be ſome Deſcription of the Arteries, and Nerves and Veins.

The Enmity and Production of the ſeveral Members muſt be explain'd by the reſpect the Cacochymias have to one another; as *Renum mater eſt pulmo.*

The ſalt Lympha of the Lungs paſſes by Urine, and produces it.

Filius hepar, that is, out of the Serum of the Blood, the Blood it ſelf is produc'd.

Hoſtis eſt lieu & Stomachus, that is, the ſweet and acid Humour, are contrary to ſaltneſs of the Serum; *Hoſpes eſt cor*, that is, the cholerick Cacochymias is mix'd with the Urine; ſo we muſt interpret the Contrariety and Production of the Liver, Heart, Stomach, Lungs, as I have done that of the Reins from the Serum of the Blood the Blood is produc'd, (*Hepatis mater ſunt Renes*) from the pure Blood the choleric Blood is produc'd, (*Filius cor,*) the ſalt Limpha of the Lungs infects or alters the pure Blood, (*Hoſtis pulmo*, &c.) the ſweet Chyle is mix'd with the Blood, and increaſes it, and helps its Motion, (*Hoſpes lieu & Stomachus, cordis Mater eſt hepar;*) choleric Blood is produc'd from the pure Blood,

Blood, *Filius lien & Stomachus*; the Spleen, Acid is produc'd by aduſtion of the Blood, and the Stomach has its Ferment from the Blood, *Hoſtis ſunt renes*; the crudity of the Serum is contrary to the choleric Blood, and corrects it.

Hoſpis pulmo, that is, the ſalt Limpha mixes naturally with the Blood.

Lienis & Stomachi Mater eſt cor, the choleric Blood produces the ſplenetic Humour, and the Ferment of the Stomach, *Filius pulmo*; the ſalt Limpha ariſes from the Chyle by aduſtion, *Hoſtis hepar*; pure Blood has little of the phlegmatic and ſplenetic Humour, *Hoſpites ſunt renes*; the ſalt Serum is naturally mix'd with the crude Chyle, and acid Humour.

Pulmonis Mater ſunt lien & Stomachus, the ſalt Limpha of the Lungs is bred from the Chyle, and acid Humour, both are mix'd in the Stomach, *Filii ſunt renes*; the ſalt Urine is from the ſalt Limpha, *Hoſtis eſt cor*; that is, the choleric Cacochymia encreaſes the Acrimony of the Limpha, *Hoſpes hepar*; the pure Blood mixes with it, and tempers the Acrimony.

Since the choleric Cacochymia appears both in the Heart or Blood, and ſmall Inteſtines; therefore they are joyn'd as a principal Member and Inteſtine.

The *Folliculus fellis* is joyn'd to the Liver, becauſe the Sanguification depends on the Gall.

The Stomach is joyn'd with the Spleen, becauſe the ſplenetic Acid appears in it.

The thick Inteſtines are joyn'd with the Lungs, becauſe a windy Chyle affects both with Inflations; the Reins are joyn'd with the urinary Canals, becauſe the Urines paſſes all of them alike; and to the right Reins, the *porta vitæ*, or ſpermatic Veſſels, becauſe they are neighbouring Parts.

The ſame Pulſe ſhews the Diſeaſes both of the five Members, and their Inteſtines; but the Members have a Pulſe more hard, great and quick; and the Inteſtine's Diſeaſes are known by the ſoftneſs and flowneſs joyn'd with the ſame Pulſe.

The Pulſe of the Bladder, or viæ veſicæ, *or ſerous Conſtitution, and its preternatural Alterations.*

The natural Pulſe of the Bladder is in the third place of both Arms call'd *Che*, and it is *Profundus*.

If the Pulſe be ſlow in all the three places, it indicates Coldneſs, and that the Skin and Fleſh are dry'd.

If

If *Raro obtuſe*, the Hair is dry'd.

If the Pulſe be *Plenus crebro-acutus*, it indicates a Strangury; if *Plenus magnus*, a ſtoppage in the Ureters, and Heat there.

If *Crebro-acutus chordæ tenſæ ſimilis*, it indicates weight in the Reins and Feet.

If *Profundus intenſus*, it indicates Pain.

If the Pulſe be *Profunde*, only *Mollis creber æqualis*, it indicates that there is no Diſeaſe.

If *natant intenſe*, it indicates Deafneſs.

If the Pulſe be *Natans irrepens*, the danger is in the Stomach.

The *Pulſus profundus* of the Bladder, and *Natans*, indicates a watery Wind; if *Vacuus*, Death; if *Chordæ tenſæ ſimilis*, Death; the quick Pulſe of the *Veſica* and *Profundus*, and the great Pulſe of the Liver quick and *Profundus*, are ſigns of the Small-Pox.

The Pulſe in the third place of the right Hand, is *Profundus crebro acutus*.

The Pulſe of the Lungs, or of the ſalt Conſtitution, or of the way of the Lungs.

The natural Pulſe of the Lungs is *natans, rarus, brevis*, the contrary is *magnus, exundans, chordæ tenſæ ſimilis*.

If the Pulſe be alſo *natans*, it indicates Wind in the Lungs, and *mucus* in the Noſe; and Heat and Cold, Pains in the Skin and Fleſh, ſharp Tears with Pain; all theſe are Signs of Defluxions.

If *natans* and *plenus*, the Throat is ſore, ſtoppage in the Noſe, binding of the Body.

If *plenus magnus crebro-acutus*, it indicates dry Hair, drineſs in the Noſe, dry Throat.

In Autumn 'tis *pleno ſolidus*.

If the Pulſe be profund intenſe *crebro-acutus*, 'tis a ſign of a Cough.

If the Pulſe be natant and ſmall, it is in the *via pulmomum*; if exundant, it indicates fulneſs in the Breaſt, and Flux of the Belly, or Wind.

If *chordæ tenſæ ſimilis*, it indicates Cold in the inner parts of the Inteſtines.

If the Pulſe be in *extremis plenus in medio vacuus*, it indicates cruel Pain.

If the Pulſe be *profundus ſubtilis*, and *crebro-acutus*, the Bones are burnt, the Skin obſtructed, and Heat and Cold affects it.

The profund Pulſe of the Lungs indicates Hæmorrhagies, and Heat and Death.

The

The preternatural Pulſes of the Stomach, or of the via Stomachæ.

Its natural Pulſe is remiſs and languid; if it loſe its Strength, 'tis intermitting like the pecking of Birds.

If the Pulſe be remiſs in all the three places, it indicates Heat of the *Stomach* and *Fœtor* in the Mouth, and Vomiting, Weakneſs, ſwelling of the Gums.

If the Pulſe be *plenus* and *natans*, it indicates Heat, good Digeſtion; but the Stomach has Emptineſs and Thirſt.

If the Pulſe be *crebro-acutus*, it indicates Heat.

If the Pulſe be *raro obtuſus*, it indicates ſmall Appetite, and weak Digeſtion, and little Nouriſhment of Parts.

If ſmall and natant, it indicates ſome accidental Heat, which goes and comes, and the Pulſe is ſmall and remiſs.

If the Pulſe be *intenſus*, it indicates Pain in the Stomach, and Diſorders in the Nerves, Nauſeouſneſs.

If *chordæ tenſæ ſimilis*, it indicates much Blood, as the Spirits of the Liver do fill it, which is a ſign of Health.

If *magnus* and *plenus*, it indicates Pain of the Heart.

If the Pulſe exceed the ſecond place, it indicates that the Spittle flows out.

If the five Members have not their proper Sounds, Colours, Odors, Sapors, and Liquors, they will not have an agreeable Pulſe.

If the Sick delight in Acrids, the Lungs are affected; if in Bitters, the Heart; if in Acids, the Liver; if in Sweets, the Spleen or Stomach; if in Salt, the Kidnies.

The Liquor of the Heart is Sweat, of the Liver tears, of the Lungs a *mucus*, of the Stomach a *ſaliva*, of the Kidnies Urine.

The *Chineſe* make five Fluxes; the white from the great Inteſtines; the red from the ſmall; the yellow from Indigeſtion; another from windy Spirits; the fifth from want of Retention.

The Nine ways of the Pulſe compar'd to the nine Stars, nine Regions, nine Members.

1. The long Pulſe, it is found longer than the three places like a Spear; it is from Heat in the Spring it appears moſt, and indicates Reſtleſsneſs, Heat in the Members, and inclination to Sleep.

2. A ſhort Pulſe, it is from the radical Moiſture, and ſhews want of Digeſtion; this does not reach the place of the three

Pulſes

Pulſes in the Arm ; the Heat is depreſſed by the radical moiſture ; Cold is in the Inteſtines, and the Meat produces cold Spirits.

3. The *Pulſus vacuus* depends on radical moiſture, 'tis a deficient Pulſe ; it indicates ſmall Spirits, much Fear, little Blood in the Members, which produces a troubleſome Heat.

4. The *Pulſus celer* is from Primigenial Heat ; 'tis very frequent in the firſt place.

5. *Pulſus ligatus* depends on the *humidum radicale*, it comes ſometimes, (or intermits) and returns ; it indicates a Pulſe in the four Parts of the Body, and ſadneſs, and windy Spirits in the Bowels.

6. *Pulſus vicarius* is from the radical moiſture, it ſometimes moves like the *natans*, and riſes, but cannot return ; it is in the Lean and Weak, and Speechleſs ; this is the Vermicular Pulſe.

7. *Pulſus trahens* from radical moiſture, we cannot find it after the Finger has felt it, but after examination it is ; it indicates pains in the Hands.

8. *Pulſus tum ſeu motus*, it indicates a Hæmorrhage, and Laſſitude from Emptineſs ; it riſes from the Spirits, which are in the *humidum radicale* ; 'tis the *pulſus profundiſſimus*.

9. *Pulſus ſubtilis* is from the *humidum radicale*, its feels like Cotton, 'tis very ſmall; it indicates Cold within and Weakneſs, pain in the Legs.

All theſe Pulſes which depend on Heat ought to be referr'd to the Pulſes, *ad extra*; all thoſe which depend on radical moiſture to the Pulſes, *ad intra*.

Prognoſtication from the Pulſe.

In the time of one Reſpiration there are four Pulſes, or five without any Diſeaſe; if there be three the Pulſe is too ſlow; if two, there is extream Coldneſs; if ſix, *ictus*, the Pulſe is too frequent; if ſeven, the Pulſe is very quick, and very much Heat; if nine, it indicates Death; if ten, more dangerous; if eleven or twelve immediate Death; one or two, *ictus*, in one Reſpiration, indicate Death; one *ictus* in two Reſpirations is certain Death; ſlow Pulſes indicate Cold, frequent Heat; Heat produces hot Winds, Cold Æreal Spirits.

The *Pulſus ad extra* ſhews the Diſeaſes in the extremity; the *pulſus ad intra*, the Diſeaſes within the Body.

The *Chineſe* ſuppoſe Circulation of the Blood in the Veins, and of the Spirits within,

within, and without, the Blood, in twenty four hours fifty times; and they believe the number mentioned sometimes exceeds, or is deficient; and both extreams are dangerous or mortal.

If a small Pulse in a fat Man be *subtilis*, 'tis as a thred of Silk, and intermitting 'tis a sign of Death.

A fat Man if the Pulse be burning, is in danger.

If a brisk Man have a rare Pulse, and if a dull, unactive Man has a quick Pulse, 'tis dangerous.

If the Pulse in the third place be very slow, or does not answer to the first place, after half a day they dye.

If in the third place there be the Pulses of the Liver and Stomach, 'tis a sign of Indigestion; and if much of the Pulse of the Liver, they dye; if there be much of the Pulse of the Liver and Lungs, 'tis a sign of a Dropsie, and swelling of the Hands and Feet; and if much of the Pulse of the Lungs, Death.

If the Pulse of the Heart and Liver be there together it signifies difficulty of Speech, stupidity of Senses, and weak Circulation.

The distruction of the Reins are indicated by *pulsus instar lapidis projecti*, by blackness

blackneſs in the Face and continua. Sweat.

The deſtruction of the Liver by *pulſus inſtar chordæ recens extenſæ*, and by a blue Countenance, continual Sweat.

The deſtruction of the Heart is indicated by a black Tongue, and *pulſus inſtar faſciæ volantis.*

The deſtruction of the Lungs by the dryneſs of the Skin, defluxion of Hair, and by *pulſus inſtar plumæ in aere fluctuantis.*

The deſcription of the deſtruction of the Members, muſt be the deſtruction of the Circulation, in the ſeveral Cacochymias when they prove fatal.

The Pulſe coming *ſicut turmatim equi aut aves*, is fatal.

If the Pulſe does not agree with the Diſeaſe, 'tis fatal; in pains of the Stomach the Pulſe ought to be *ſubtilis parvus*; if it be *magnus natans longus*, 'tis fatal.

The *pulſus parvus, ſubtilis interruptus* is fatal; and ſo is the *profundus celer debilis ſemper natans.*

If a Man be in appearance ill, but the Pulſe be good, there is no danger; and if he be not ſick, but have an ill Pulſe, 'tis dangerous.

These intermitting Pulses are signs of Death.

Pulsus lapidis à brachio projecti celeriter.

Pulsus instar solute fasciæ, pulsus similis ictui, quem aves dum carpunt grana faciunt, pulsus similis stillicidi domus, elevati pulsus similes saltibus ranarum.

Pulsus similis saltanti pisci, a Pulse like a Globe is fatal.

Tho' the Pulse be wanting in the first or second Place of the Arm; yet if in the third it be equal and proportionable to the Respiration, there is no danger.

A Table for the Chinese *Prognostication by the Intermission of Pulses.*

The Intermission.	*The Prognostication.*
After 1 Pulse	Death the next day.
After 2 Pulses	Death the third day.
After 3 Pulses	Death the fourth day.
After 4 Pulses	Death the sixth day.
After 5 Pulses	Death the fifth or seventh.
After 6 Pulses	Death the eighth.
After 7 Pulses	Death the ninth.
After 8 Pulses	Death the tenth.
After 9 Pulses	Death the tenth or eleventh.

After 10 Pulſes	Death in the beginning of Spring, or Summer.
After 11 Pulſes	Death in the beginginning of Autumn or Winter.
After 12 or 13	Death after one year in the beginning of Autumn.
After 14 or 15	Death in the beginning of Summer or Winter after a year.
After 20	Death after a year in the beginning of Autumn.
After 21 Pulſes	Death in two years.
After 25	Death in one or two years in the beginning of Winter.
After 30	Death after two or three years.
After 35	Death after three years.
After 40	Death after four years.
After 50	Death after five years.

50 Pulſes without interruption is a ſign that all the principal Members, and the leſs

leſs principal, had their natural Spirits, by which they move the Circulation, and the Body is in perfect Health. If after 40 Pulſes there be an Intermiſſion, the Reins are injur'd; if after 30 the Spirits of the Reins and Liver are affected, and want Spirits; if after 20 the Reins, Liver, and Spleen are affected; if after 10 Pulſes the Reins, Liver, Spleen, Stomach, Heart and Lungs want Spirits.

Note, By the Intermiſſion in the ſeveral Members muſt be underſtood, the Intermiſſion in Blood and Spirits, tinctur'd with the ſeveral Cacochymias; ſo the Intermiſſion in a Serous Conſtitution, Choleric, Phlegmatic, *&c.*

Note, That the *Chineſe* ſuppoſe the Air is attracted into the ſeveral Members, and there produces their Spirits, which immediately manage the Circulation.

Prognoſtications concerning the deſtruction of the Members, that is, of the Cacochymical Bloods.

Deſtruction of the Members.	*Prognoſtications.*
If the Liver or Blood be deſtroyed,	They dye on the 8th day.

If

If the Gall be deſtroyed and the Eye-lids fall,	They dye on the 7th.
If the Nerves be deſtroyed,	Death on the 8th or or 9th, a ſign of which is a blue colour in the Nails.
If the Heart be dedeſtroyed,	Death after 1 or 2 days.
If the ſmall Inteſtine be deſtroyed,	Death on the 6th.
If the Stomach be deſtroyed,	Death after 12 days
If the Belly be deſtroyed as in a *Lumbago*, with pain in the Back and debility of Motion,	Death after 5 or 8 days.
If the Fleſh be deſtroyed, Death after 6 days, as in Bloody Stools,	Death after 6 days, or 9, if there be a Tumour in the Feet.
If the Lungs be dedeſtroyed, as in Dyſpnæas,	Death after 3 days.

If

If the great Inteſtines are deſtroyed,	This is Incurable, 'tis known by a continual Flux, and Death comes when it ſtops.
If the *Veſica* be deſtroyed,	Death on the 4th day, or 7th.
If the Bones are deſtroyed, the Teeth are yellow, the Pulſe undoſe,	Death after 10 days.

The ſigns of the deſtruction of the Parts, and their Pulſes may be ſeen in the Tables; and the deſtruction of a Part is the loſs of Motion, or of Secretion, which is fatal; or too much Secretion by depravation of Humours Secreted; or the deſtruction of its ſolid Parts, by Inflammations, Tumours, Defluxions, Pains, Hæmorrhagies, *&c.*

Ths Pulſes of the ſeveral Seaſons being preternatural.	*The Prognoſtications.*
If inſtead of the Pulſe in the Spring there	Death happens in the *ciclo ſexaginario*, being to number it hap-

happen the Pulse of Autumn, *raro obtusus*,

from the beginning of the Spring betwixt the 57th and 58th day.

If the Summer has the Pulse of the Winter, *profundus*,

Death happens in the *ciclus sexsagenarius*, beginning to number it from the beginning of Summer betwixt the 39th and 30th day.

If in the Winter the Pulse of the Stomach happen *tardus*, and *languidus*, instead of the *profundus*,

Death happens in the *ciclo sexagenario*, which is number'd from the beginning of the Winter betwixt the 44th and 46th days.

If in Autumn instead of the *raro obtusus*, the *exundant* Pulse of the Summer,

Death happens in the *ciclus sexaginarius*, which is number'd from the beginning of Autumn, in the 33th or 34th days.

In the 5th Season of the year, which continues 18 days at the end of the 4 annual Seasons; instead of the remiss Pulse these be the *chordæ tensæ similis.*

Death happens in the *ciclus sexaginarius* betwixt the 53d and 54th days.

In external Pain there is a repletion without, and vacuity within; in internal Pain there is a repletion within, and vacuity of Blood, Heat, Secretions without.

All colours are imputed to the Liver, that is, the Blood; in the Heart or Choleric Tempers, it makes a florid colour in the Face; in the Phlegmatic, or Diseases of the Stomac, the Heart or Blood makes a yellowish colour; in the Diseases of the Lungs, the Liver (or Blood) makes a pale colour; in the Diseases of the *Vesica* (or *Serum*) the Liver makes a black colour, from stagnating Blood; the Liver in it self has a blue colour.

The Heart or Choleric, rarified Blood, produces all Odors; in it self it has an

aduſt *Fætor, via cordis ingrediens ſtoma chum producit odorem ſuavem*, that is, the hot Blood digeſts the Chyle by its ferment; *Ingrediens hepar ibi facit odorem carnis*, that is, the Choleric Conſtitution, if the Blood abounds, are very Fleſhly; *Ingrediens pulmones facit odorem carnis putridæ*, that is, Choleric Blood corrupts the Lungs.

The Pulſe is *exundans magnus Intenſus*, when any one hates Fætors, and 'tis a true ſign of great Heat. In all Indigeſtions the *Chineſe* obſerve, that there is a natural Appetite for Bitters.

The Stomach, that is, the Chyle, produces all Taſtes, *ſi via ejus ingreditur hepar facit ibi acidum ſaporem*; the Acid of the Blood is from Chyle, *ſi ingreditur, Cor facit ibi ſaporem amarem*, by long digeſtion the Chyle is made bitter Choleric; it makes a burning Taſte in the Lungs, and a Salt in Urine, and it has a ſweet Taſte in it ſelf.

The Lungs produce the 5 ſounds in the 5 Conſtitutions; in the Sanguine, ſighing; in the Choleric, loquacity; in the Phlegmatic, ſinging; in the Salt Lympha, weeping; in the Serous, a *Singultus*.

We muſt joyn the common ſigns of Diſeaſes with the Pulſe to confirm our Judgments, and adhere to the Indication

or

or Prognostication by the Pulse, before other signs.

A quick *exundant* Intense Pulse indicates Heat, and gentle Wind.

A weak Pulse, *languid*, *profund*, *subtile*, slow, indicates a cold Disease, and cold Wind; the frequent Pulses are signs of Heat, the rare of Cold.

If in the way of the Pulse of the Heart there be 45 *ictus* without changes, all is well; but if after 31 *ictus* the Pulse be *profund*, and intermitting, it becomes natural in the Spring; but it indicates mischief next Summer; and if it appears so in the Summer, it indicates Death in Autumn.

If in Winter, when the Pulse is *profundus*, after 31 *ictus* the Pulse be *natant*, he dies in the 3d month.

If we feel the Pulse in the *via hepatis*, if after 36 *ictus* in the Summer the Pulse be *profundus*, it indicates Wind and Heat.

If after 39 *ictus* the Pulse be rare and weak, it indicates destruction of the Member, and Death.

If after 19 *ictus* the Pulse be *profundus*, it indicates certain Death.

If in the *via Vesicæ* there be 45 *ictus* without stop, it is a sign of Health there; but if the Pulse be very quick it indicates

Heat; if *pulsus chordæ similis*, Wind; *languid* and *tardus* indicates destruction of the *Vesica*.

If after 25 *ictus* the Pulse be *profund* it indiates destruction of the Urinary Members.

If in the way of the Lungs, if the Pulse be naturally 45 *ictus*, all is well; if very quick it indicates Wind; if after 27 *ictus* the Pulse be *languido tardus*, it indicates cold in the Lungs; if the Pulse be *profunde*, it indicates a *Somno lentia*; if it stops after 12 *ictus* it indicates a Cough, and spitting Matter, and falling of the Hair, of difficult cure.

If in the way of the Stomach there be 45 natural Pulses, all is well; if the Pulses be quick, the Stomach is hot, and cannot digest; if the Pulse be *languid* and slow, the Stomach is cold.

In the *Porta vitæ* 45 *ictus* naturally are signs of Health; if after 19 it be *profund* it is very fatal.

If 45 *ictus* happen without a stop, the Body is in Health; if after 45 *ictus* the Pulse stops, it indicates the destruction of one Member, and Death in 4 years; if after 31 *ictus*, then Death in 3 years; if after 21 *ictus* there be a stop, then Death in 2 years; if after 15 *ictus* there be an intermission,

miſſion, it indicates Death in 1 year, if in a leſs number, ſooner; if it ſtop after 3 *ictus* it indicates Death in 6 or 9 days; if after 4 *ictus* Death after 8 days.

In a Malignant Fever and hot Diſeaſes, the Pulſe is *exundant* and quick, they paſs the place of great Heat; and if they appear ſo in one day, they recover; but if below the place of the Reins, the Pulſe be ſmall and *languid*, and be ſometimes *cadent*, and is obſerved ſlow and *languid*, 'tis dangerous.

There are not many Diſeaſes from Siccity; all the great increaſe in the day, but the ſlow, weak, and *exundant* ſmall decreaſe more.

A hot Diſeaſe ought to have a *natant exundant* Pulſe, but if it be ſubtil and ſmall, it cannot be cured.

After ſweating the Pulſe is more quiet.

A very hot Breath and troubled Pulſe, is dangerous.

The *pulſus crebro-acutus* is a ſign of Life, the *raro obtuſus* of Death.

The Malignity of the *calor primogenius* produces a perturbation, and reſtleſsneſs in the Limbs, and redneſs of the Face, and ſpots in the Skin, and Delirium, motion in the Throat; ſweating in the extremity; the opening of the Mouth, like a

Fish, are dangerous; if it holds out seven days they may escape.

A Malignant Fever from the malignity of the *humidum radicale* produces heavinefs, oppreſſion of the Shoulders, pain in the Eyes, which is intolerable; vehement pain in the Stomach; black or blue colour in the Mouth; oppreſſion in the Heart from venomous Spirits; coldneſs in the extremity, the Pulſe is *ſubtilis* and *profundus*; if in ſix days the Diſeaſe can be cur'd, it will ſucceed well.

If in Diſeaſes of the Belly the Pulſe be great, there is no danger; if ſmall and empty there is great danger; the ſtrength is like a *baliſta intenſa*.

In Bleeding, the Pulſe ought to be *parvus & exiguus*, and it is well; but a great *exundant* is fatal; the Diſeaſe of reſtleſsneſs has the Pulſe of Madneſs.

If they be then full, *trahentis inſtar magnus creber*, 'tis a hopeful caſe; but if the firſt, ſecond and third place have a *profund* Pulſe; and ſometimes *ſubtilis*, 'tis dangerous in Phrenſies.

The Pulſe of great Thirſt is quick and great, and is a ſign of Life, the empty and ſmall is ſign of a deep Diſeaſe, which cannot eaſily be cur'd.

A Diſ-

In a Diſeaſe from Water, if the Pulſe be natant and great, 'tis a ſign of Life; if *profunde* and *ſubtile*, 'tis a ſign 'tis agreeable to the Diſeaſes; ſmall and ſlow Pulſes are ſigns of Reſtleſſneſs, becauſe there are few Spirits, and of little Speech; if the Pulſe be great, 'tis hardly cur'd.

In three places, if the Pulſe be *natans* and *exundans*, it may be eaſily cur'd; in bleeding at the Noſe, and vomiting Blood, the Pulſe ought to be *ſubtilis* and *profundus*; but if it become *natans* and *magnus*, 'tis dangerous.

The various Pulſe is not cur'd.

In Diſeaſes from Pain of the Heart and Belly, the Pulſe ought to be *profundus ſubtilis*; but if natant and great, *chordæ tenſæ ſimilis vel longus*, 'tis fatal.

If the Pulſe be *magnus* and *frequens* in three places, or a long Diſeaſe, 'tis a ſign of Life; and the *parvus* and *cadens* in a long Diſeaſe, are ſigns of Death.

In the three places, the *pulſus mollis debilis*, in a long Diſeaſe is not to be cur'd, but is cur'd of it ſelf; but if diſturb'd by Phyſick, 'tis fatal.

In the three places, the *pulſus natans*, and *alligatus ſeu ruptus*, in a long Diſeaſe is fatal; *natans*, and *crebro-acutus*, in a long Diſeaſe indicates Death; *natans*

and *frequens* in a long Diſeaſe ſignifies Life.

In the three places, the *Pulſus ruptus* in a long Diſeaſe ſignifies Life.

Chordæ extenſæ ſimilis, and *frequens*, in a long Diſeaſe, is a ſign of Life; if pure and frequent, like Quickſilver, it indicates venomous Worms, and Death; if *frequens* and *mollis*, the ſame Worms, but Life.

In three places, *Pulſus juſculi ubi pinquedo natat & bullit*, in a long Diſeaſe is fatal.

In three places the Pulſe is like *ſtuminus aroneæ*, in a long Diſeaſe intimates Death.

In three places the Pulſe is like a bent Bow, which indicates Death; or if it be like to *funiculo*, or *coronæ unionum*, 'tis fatal.

In three places the Pulſe is like running Water, after a Quiet in a long Diſeaſe is cur'd of it ſelf.

If the Pulſe be like *ſtillicidium domus*, they die in ten or fourteen Days.

If the Pulſe be in three places like the pecking of Birds in a long Diſeaſe, they die in ſeven Days.

If the Pulſe be *ſimilis aquæ ferventi in lebete* in the Morning, they die at Night;

if

if the ſame be in the middle of the Night, they die at next Noon; if in the middle of the Day, they die at Midnight.

In a malignant Fever from Heat, there is a *Delirium*, Fluxes, Sadneſs: In a malignant Fever from the *humidum radicale*, they have great Laſſitude or Weight in the Limbs, coldneſs in the Extremities, ſickneſs at Stomach.

In a malignant Fever from extraordinary Heat, this is the third Species; if the Pulſe be exundant and great, 'tis a ſign of Life, the *profundus ſubtilis* of Death.

If in Pain of the Head, if the Pulſe be *natans*, and *crebro-acutus*, it ſignifies Life; the *brevis*, and *raro-obtuſus*, Death.

In Diſeaſes of the Stomach, *ilia*, and *viſcera natans magnus*, 'tis a ſign of Life; if *vacuus* and *parvus*, 'tis a ſign of Death.

In Fluxes of the Belly, if the Pulſe be *exilis parvus*, 'tis a ſign of Life; if *natans exundans*, 'tis a ſign of Death.

In a *Delirium*, if the Pulſe be *plenus* and *magnus*, Life; if *profundus* and *debilis*, it foretels Death.

In great Thirſt, if the Pulſe be frequent and great, Life; if empty and ſmall, it indicates Death.

If

If the Colour of the Sick be agreeable to the Pulſe, they recover; if contrary, they die; the five Members make five Colours in the Face.

The *calor cæruleus* is from the Liver, and muſt have the Pulſe of that Member.

The red Colour muſt have the Pulſe of the Heart, *magnus natans.*

The Colour of the Face, yellow, muſt have the Pulſe of the Stomach, *remiſſus magnus.*

The pale Colour in the Face muſt have the Pulſe of the Lungs, *natans, brevis, rarus.*

The black Colour in the Face has the Pulſe of the Kidnies, *profundus debilis mollis crebor.*

By theſe Colours, Sounds, Odors, Taſtes, Liquors, we may diſcern the Diſeaſes, as well as by the Pulſe: The Colours appears moſt in the Eyes, red, from the Heart; white, from the Lungs; black, from the *Veſica*; yellow, from the Stomach; Sky-colour'd, from the Liver; and ſince by the Colours of the Face, we know the Cacochymias, and the Colours belong to each Member; 'tis plain, that the *Chineſe* deſcribe the Pulſe of the Cacochymias by the Pulſe of the Members.

In

In Pains of the Head, the *Pulſus brevis rarus* is fatal; if natant and frequent, it indicates, that Wind is the cauſe of the Diſeaſe, and may be eaſily cur'd.

In want of Speech produc'd by Wind, the *pulſus tardus* and *natans*, is a good ſign, *celer plenus magnus frequens*, indicates Death.

Interius plenus pulſus, indicates Pains of the Stomach, and Belly, and fulneſs, and the Heart is drawn downwards; there is a vomiting Motion, Heat in the Hands and Feet.

Pulſus profundus debilis, indicates ſmall Wind and Stools, and it is fatal.

If *Exterior* be the Repletion, inward Heat and Vomiting; if the Pulſe be exundant and great, 'tis incurable.

If a *vacuum* be inwardly and outwardly, it indicates coldneſs of the Body, the Body ſweats great Drops; they Vomit a little, the Pulſe is wanting, the Body dies with Inquietude, looks Ghaſtly, and falls away, and the Blood grows thick.

The Pulſes great and quick, are of hard Cure.

If malignity of the Spirits appears in the Superficies, and the Tumors fall; if the Pulſe be natant and quick, 'tis Curable; if the Pulſe be *ſubtilis*, it indicates a difficult Cure.

In

In a malignant Diſeaſe, when it appears in the Belly and Stomach.

If the Pulſe be *ſubtilis*, 'tis of ſome hopes; if *natans magnus*, 'tis dangerous when golden Spots appears in the Skin, it indicates Plenitude; if the Pulſe be *vacuus ſubtilis*, 'tis hopeful; if quick, great and frequent, 'tis dangerous.

All Pulſes in the third place *Che*, and the firſt *Cun*; if intenſe and frequent, indicate Vomiting to be increas'd, and proceed from Worms.

If Poiſon be within, and the *Pulſus* is *exundans magnus*, 'tis ſigns of Recovery; the *ſubtilis*, *parvus*, 'tis a ſign of Death.

If the Pulſe be once at quiet, the *circulus vitæ* is broke; but as long as it continues, the ſpiritual Soul and Body is united.

An empty Pulſe ſhews ſmall Strength, affliction of the Head, Wind, Noiſe in the Ears, coldneſs in the Extremities; the empty Pulſes and *vacuus* are *ſubtiles molles*, *tardi*, *debiles*; they indicate the ſame as empty Pulſes, and want of Blaod, ſoftneſs in the Fleſh; the remiſs and empty Pulſes are ſlow and languid.

The full Pulſes are frequent, exundant, great, indicate Wind, Heat, full Blood, Pain from Motion, intercepted; the full

and

and frequent Pulſes are ſigns of cold Wind, and Heat with moiſture; this is an Aguiſhneſs.

All manner of ſenſible *Phænomena* are obſerv'd by the *Chineſe* in their judging of Diſeaſes, and their Prognoſticating concerning their Event, as well as by the Pulſes.

All the Colours they deduce from the Liver, that is, the Blood, the Heart governs the Odors, and Fœtors; and by the Heart is underſtood the choleric Blood, for all hot Conſtitutions hate Fœtids.

The Pulſe *natans crebro-acutus celer intenſus*, happen in any long Diſeaſe; they are eaſily cur'd.

The Stomach or Chyle makes the Taſtes, the Lungs govern Sounds, the Bladder Liquors, and Humours.

Moderate Pulſes in all the three places indicate a good Conſtitution, and unequal deficient Pulſes Death; if the Pulſe be *vacuus*, and *raro obtuſus*, the Diſeaſe is long; if *vacuus* and *crebet*, or *vacuus* and *remiſſus*, they die.

If *vacuus chordæ extenſæ ſimilis & celer*, it indicates Madneſs and Death.

In three places, if the Pulſe be *ſolidus*, *plenus*, *magnus*, 'tis fatal.

If

If *solidus crebro-acutus*, and the Diſeaſe be long, 'tis hopeful; if *ſolidus remiſſus*, they recover; if *pleno ſolidus* and *intenſus*, it indicates Life; if *plenus intenſus*, and *teler*, 'tis a curable Madneſs; if violent in three places, 'tis malignant, it indicates Death.

The *Pulſus ſubtilis* and *mollis* in three places, in a long Diſeaſe indicates Life; and the ſame if it be *ſubtilis* and *frequens*, ſmall and intenſe, Death.

The Cure of Diſeaſes by the Chineſe.

All the Employment of the *Chineſe* Doctors, is to know their Diſeaſes by the preternatural Pulſe, and to Cure their Exceſſes and Defects by ſimple Medicines of ſome particular Taſtes, which they deſcribe in their Books.

The Pulſe in the *via Cordis* is exundant in Health; this is the Pulſe of the choleric Conſtitution; but if the Pulſe of the Liver invade the *via Chordis*, the Pulſe is *chordæ tenſæ ſimilis*; the Heart is ſaid to be hurt by a Wind, and this Pulſe is a ſign of leſs Heat than the exundant; and this is call'd *vitium vacui*, in reſpect of the Heat, not of the Veſſels; if the ſlow and remiſs Pulſe of the Stomach enters into

into the *via Chordis*; this indicates the *vitium repletionis*; by diet and wearineſs the Heart is oppreſſed by ſuperfluous *humidum radicale*.

If the *profundus pulſus* enters into the Heart, the Heart is overcome by much *humidum radicale* and coldneſs, and then the Water extinguiſhes the Fire.

In the *vitium vacui* the Heat begins to abate; in the *vitium repletionis* the Heat is oppreſſed, and in the *vitium latrocinii* the Heat is extinguiſh'd.

If the Pulſe of the Lungs enters into the way of the Heart, it indicates *vitium exiguitatis*, which depends on Cold, that is, the *exundant* Pulſe becomes *natant*, which is produc'd by leſs Heat, and is cauſed by Cold in the Heart, as in a Malignant Fever, or want of Spirits.

If the *exundant* Pulſe be more intenſe or remiſs, 'tis called *vitium rectitudinis*, and this returns to a mediocrity of it ſelf.

The *Chineſe* cure theſe Pulſes thus, the want of the *Calor primigenius* muſt firſt be reſtored, and then the *humidum radicale* abounding muſt be evacuated, and if the *humidum radicale* be wanting, and the Heat exceeding, we muſt firſt reſtore the *humidum radicale*, and after evacuate the Primigenial Heat; and ſo we reduce

theſe

these causes of the Pulses to an equality, and the harmony of the Motion of the Blood and Spirits will return.

These Pulses depend on the *Calor primigenius*, the *exundans*, *intensus*, *natans*, *chordæ tensæ similis*, *magnus*, *celeres*, *pleni frequentes*, *solidi longi*; the exceeding quality of this Heat must be cool'd, or well temper'd, and thereby reduc'd to its natural degree, and equality with the *humidum radicale*.

These Pulses depend on the *humidum radicale*, *profundus*, *cadens*, *varius*, *remissus*, *languidus*, *rarus obtusus brevis*, *tardus*, *interruptus*, *augustus*, *tenuis*, *mollis*.

The excess of the *humidum radicale* must be cur'd by evacuating the quantity, and correcting the quality; that is, the coldness.

For the 7 exterior Pulses, or the exceeding Pulses, the *Chinese* evacuate; for the interior Pulses, or the deficient, they restore and sweat; and this is the old Methodists, *est strictum* and *laxum*.

The quick and many Pulses must be cur'd as hot Pulses, the slow and few Pulses as the cold.

If the Pulse of the *Vesica* invades the Pulse of the Liver in the Spring, the Liver has the *vitium vacui*, we must restore the

the Mother, that is, the *Vesica*; if the Pulse of the Heart, which is the *exundant*, invade the *via vesica*, 'tis *vitium repletionis*, therefore we ought *filium purgare*, purge the Heart; if the Pulse of the Stomach invades the *via vesica*, 'tis *vitium exiguitatis*; if remiss or intense, 'tis easily cur'd of it self.

The *Chinese* use evacuation by Sweat, Vomits, Purges; but they use no evacuations by Bleeding, because they say the boyling of Water in a Vessel is not cool'd by taking some of it out, so well as by putting in cold Water; and they express the alteration of Humours by inducing the quality of Fire or Water into them; they say, 'tis the Physician's Art to purge the Blood, to temper the Spirits; and they make two kinds of Cures to evacuate, or restore.

The *Chinese* never inspect the Urine, nor use Glysters, Cuppings, Epithemes, Unctions; they are their own Apothecaries; make Decoctions, Pills, Powders, and prescribe a very thin Diet of boyled Rice, lest it should hinder the Operation of their Simple Medicines, which they continue till the natural Pulse returns.

The inequality of the Elements are said to produce Diseases, these Qualities are the Cacochymias, the hot and the cold, which alter the Pulse, and the Diseases of the Pulse are the fulness or emptiness of the *Calor primigenius*, or the *humidum radicale*, which are only other Words for exceeding and deficient Rarifactions of Blood and Spirits.

The *Chinese* have particular Medicines for each Pulse *ad extra*, and *ad intra*, which they have long experienc'd.

The *Chinese* have describ'd their Medicines by their Tastes, of which I will give the following Catalogue, as the Tastes are mentioned in *Cleyer*.

1. The Acrids which are Aperatives.

Acorus, which is of an Acrid Taste.

Agallochum saporis acris. Cinnamonum acro-dulce. Zinziber saporis acris. Nitri genus amaro acre. Valde frigidum. Bituminis genus acretepidum. Caris ophyllum acretepidum.

Some Plants *salso acria temperata. Ricimus est fabarum genus saporis acris tepidum continet magnum venenum.* By this Observation we observe that poysonous Plants have a great Acrimony.

2. The

2. The Bitters are *Hepatics.*

Radix amara ſub frigida cichoreum. Radix amara dulcis frigida. Flos ſub amaro dulcis temperatus. Radix acido amara ſub frigida. Radix amaro-acris ſive acro amara abſynthium.

Radix ſalſo amara ſub frigida. Radix amara & acida dulcis ſub frigida.

Semen rhaphani acre tepidum. Camphorra acris ſaporis & amori.

Myrrha acro amara. Nucleus mali perſici amaro dulcis.

3. Salt Taſtes, Opthalmics, Diuretics, Aperative for the Menſtrua.

Radix ſalſo dulcis ſub frigida. Marinus lapis acro ſalſus frigidus tepidum. Salſo acre tepidum, fructus amaro dulcis ſalſus & frigidus.

Canori genus ſalſum Cornu cervinum ſalſum tepidum. Anguis dulco ſalſus. Oſtreæ ſalſæ ovis Cornu amaro ſalſum frigidum.

Note, That many Plants *ſalſo acrum* are venomous, and ſo are the *amara ſalſa frigida.*

4. The Acids, *Acerbes*, cooling Stypticks.

Sulphur acidum valde calidum. Ærugo raſilis amaro acerba. Ælumen acidum frigidum. Semen acidum temperatum. Mali Cotonei radix acido tepida. Cortex pomorum punicorum. Acido acer-

bus, cortex auriaci pomi acido-amarus. Aurantii cortex acri amarus. Rhinocerotis cornu amaro acidum salsum frigidum.

Note, That the Aromatics are comprehended under the Acrid Tastes, as well as the Corrosives, the Styptics under the *Acerbes.*

5. The sweet Tastes are the Pulmonics. *Liquoritia* is *dulcis temperata. Scorzonera* is *dulcis temperata. Semen acro dulce temperatum. Radix acido dulcis semen amaro dulce sub frigidum. Coriza dulcis sub frigida. Salso dulce temperatum. Equisetum sub amora dulce. Cupressi resina amaro dulcis. Cupressi liquor dulcis temperatus. Ejus glans saporis. Acro dulcis, cortex amarus frigiaus.* Thus *amaro dulce. Folia arundinum amaro dulcia. Lapis amaro dulcis. Lapis instar cretæ dulcis frigidus. Scorpio acri dulcis temperatus.*

6. The last Taste which I take to be the *fatuus* of the *Grecians*, or watery mucilaginous, the *Chinese* call *insipidum frigidum radix subdulcis Insipida temperata.*

These are the Tastes by which the *Chinese* describe their simple Medicines, whether they be Vegitables, Minerals, or Animals; and in the description of these

these Simples they are as curious as *Galen* was; and since both *Greeks* and *Chinese* approve of the descriptions of the sensible Tastes and Quality of the Medicines, I hope this Learned Age will pursue the same Method, and improve what I have begun, in the classing of them by their Tastes.

If any one should object, That the *Chinese* Expression are not Symbolical, let him literally Interpret this, *Si fuerit oriens repletus & occidens evacuatus necesse, erit restaurare boream & evacuare Austrum*; the plain sence of this is, If the Liver which respects the Element of Trees which grow in the East be full, and the Metals which grow in the West, signifie the Lympha of the Lungs, and that be evacuated, we must purge the Fire of the South, that is, the Choleric Blood, which is usually signified by the Heart, and that respects the Element of Fire; and we must restore the North, and that is, the Serum of the Blood. In short, 'tis thus, If the Blood be very hot, and the Lympha of the Lungs too dry or viscid, we must cool and dilute the Humours.

If any object, That the Members must not be interpreted by the Cacochymias, but literally, I will give this Quotation to prove it, *Cum via vesica ingreditur hepar, lacrymarum aquam producit; cum ingreditar Cor sudorem, cum ingreditur Stomachum salivam nimiam, cum ingreditur pulmones mucum nanum multum, in se vero urinæ aquam*; Is it not evident that the Serum of the Blood by its Secretion produces the Tears, Sweat, Saliva, *Mucus* in the Lungs, and Nose, and Urine? Then the *Chinese*, by the *via vesica* and its Pulse, describe the serose Cacochymia; and the reason why they joyn the great Intestines as an Appendix to the Lungs, is because of their Mucus and Wind, which is like that in the Lungs.

I must beg your leave, before I conclude, to reflect on the Antiquity of this Art of feeling the Pulse, which seems to be deriv'd from *Noah*, because the *Chinese* derive it from their first Kings, 2600 years before our Saviour; they have this Art by Tradition, as well as the Notion of the Circulation, because their Books give no other account of it, nor reason for it, but that they received them from their Predecessors; and it is an excellent

Custom

Cuſtom that the *Chineſe* never change their Language, Laws, Philoſophy nor Habits; and this has occaſioned their preſerving the old Morality, the old excellent Conſtitution of Government, and their old Doctrines about Natural Philoſophy, which they received from the Primitive Fathers who lived 300 years, in which time they improv'd moſt Arts; and the *Chineſe* have moſt faithfully preſerved the Tradition of thoſe Arts; from the *Caldeans* and *Egpptians*, the principal parts of all our Arts are by Tradition deriv'd. Upon thoſe old Foundations, Poſterity has built many Hypotheſis to entertain every Age with ſome Novelty; and if this Age had not the Traditions of the old Arts, we could not have now improv'd them; by clearer Explications or Additions to the Fundamental Tradition, not only Phyſick, Muſick, Poetry, Architecture, Geometry, were diſcover'd at firſt by ſome Inſpiration to the Inhabitants before the Flood; but alſo the Religious Worſhip, by Prayer, Sacrifice, Purifications, had a Divine Revelation at firſt. I will give this farther Inſtance of the Antiquity of this Art, and that is, becauſe it's deliver'd in a Symbolical way, as the old *Egyptian* Learning was. This

is probably their Method of concealing their Learning from the Vulgar, becauſe the *Chineſe* have no Learned Languages, as the *Europeans* have; and, I believe, the Diſcourſe of their Doctors is this myſtical Cant.

SIR,

" I Have only reſerved my ſelf room
" to return Thanks for the Favour you
" have ſhewed to me, who am unknown,
" but am very ſenſible of the Service you
" have done my Subject, by the Book you
" lent me.

Sir,

Your very much oblig'd Friend,

Golden-ſquare, Jan. 1. 1706. *and humble Servant*,

JOHN FLOYER.

I have finiſhed what I deſigned about the Art of Pulſes, and the Reader, who will imitate the *Galenic* Art, muſt attain the knowledge of different Pulſes, and the natural Magnitude, and its Exceſſes by a long Experience; but if the Reader deſires to imitate the *Chineſe* Art, he muſt have a very curious Senſe of Feeling; and he muſt ſpend a long time in obſerving of the Pulſe, and he muſt learn the *Chineſe* Symbolical manner of expreſſing of himſelf about the Pulſes; for 'tis not eaſie to ſeparate the *Chineſe* Notions from their Practice.

The Art of feeling the Pulſe, which I have propos'd for diſtinction ſake, I will call Mechanical; 'tis ſhort, eaſie, and more certain than the *Galenical* or *Chineſe* Art, becauſe it requires no more than counting of the Pulſe, and obſerving the time by the Pulſe-Watch; this will ſhew the Diſeaſes of the Fluids, that is, of the Blood and Spirits; and the Method to raiſe or ſink the Pulſe; and by the ſame Method the Circulation will be ſtopt or accelerated; and he who knows and can beſt regulate the Exceſſes or Defects in the Pulſe, and Circulation (as I conjecture) in the Learned Ages which are to come, will be eſteemed the beſt Phyſician:

ſician: *Galen* got all his Reputation at *Rome* by his Prognoſtications grounded on his knowledge of the Pulſe. He obtain'd the Emperor's Favour by feeling his Pulſe, and diſcovering by its Contraction, that he had no Fever when all his Phyſicians affirm'd that he had; he only preſcrib'd him ſome Wine and Pepper for the Crudity of his Stomach, and *Ung. Nardinum* outwardly, by which he was cur'd; this free way of his Phyſician *Commodus* highly commended, as the chief Duty of a Phyſician, and that it was peculiar only to Philoſophers, and not to thoſe who are lovers of Money and Glory.

Galen knew a Quartan by the Pulſe in *Eudemus*, and forbid the uſe of *Theriaca* till after the Concoction, becauſe it would double it.

Galen diſcover'd that *Cyrillus* did eat privately, by his Pulſe.

Galen diſcover'd that *Commodus*, when a Child, had an Inflammation after Exerciſe in ſome part, which afterwards appear'd in the Tonſils.

Galen told the Crudity in a Fever by a frequent Pulſe, and the end of a Quartan by a high Pulſe, which is a ſign of a Criſis; by this Rule he knew that *Antoninus*'s

toninus's Son *Sextus* would not be cur'd by a Criſis on the 6th day, but would recover on the 17th.

The Pulſe ſhews the Criſis, and if the Conſtitution be hot, and the time of the Year ſo too, the Criſis will happen by evacuations; but if the Pulſe be weak and ſlow in cold Seaſons, and cold Humours after long Fevers, *Galen* prognoſticates Abſceſſes; and this is alſo his uſeful Obſervation; if the Pulſe be good we need not fear any ill ſigns; if the Pulſe be bad many ill ſigns will not ſignifie a recovery. And that I may have *Galen*'s Authority to juſtifie my diſtinctions of the hot Cacochymias, I will give this Quotation from his firſt Book of his Comment on *Hipp.* Predictions, ἡ ξανθὴ, χολὴ γὰρ ὀπτωμένη πρῶτον μὲν ἐν τῇ ἰωδη ἰρέπεται χυμῷ, ἔπειτα, εἰς τὰ μέλανα. This is agreeable to my Scheme, Choler is the firſt hot Humour, the Æruginoſe the ſecond, and the Atrabilis the hotteſt; *Galen* foretold a Criſis by the Pulſe, and that a Hæmorrhage would happen in the right Noſtril, which gave him great Reputation. *Severus* recommended him to *Marcus Aurelius Antoninus* the Emperor, and *Lucius* his General, was his great Friend.

I will

I will conclude with this Remark of *Isaac Vossius*, *A temporibus Galeni nihil huic scientiæ accessit quin potius si verum fateri liceat adeo diminuta est, ut vix aliquem hoc seculo invenias Medicum, qui observata Galeni vel intelligat vel curet.*

Since 'tis objected by the Moderns, That the *Chinese* are Ignorant in Philosophy and Anatomy, and therefore their Pretence to the Knowledge of the Pulse is Cheat and Imposture; to this I have already answer'd, That many judicious Travellers do positively assert, that they have this Art; and I have already describ'd it, and I desire the Reader to consider these Things which evidently manifest their Art.

All Arts are grounded on a long Experience, and the *Chinese* have had above 4000 Years Knowledge in this Art, as appears by their old Book *Nuy Kim*; and they believe a Circulation from an old Tradition, tho' they know not the true Causes.

If any one should deny *Galen*'s Art about the Pulses, I would desire him to read *Galen*'s Tracts; and if any Person should deny the *Chinese* Art, I would desire him to read the Account of the old Book *Nuy Kim* in *Cleyer*.

They

They have obſcurely deſcrib'd in their Symbolical way all the uſeful parts of this Art, as the Cauſes of the hot Pulſes, *viz.* the primigenial Heat which the *Greeks* deſcribe by the innate Heat; the Moderns by the Motion or Rarifaction of the red Bullule in the Blood.

The Cauſes of the cool Pulſes, the *Chineſe* impute to *humidum radicale*, which the *Greeks* call the phlegmatic Humour; the Moderns the Serum of the Blood, or watery, white, inactive Bullulæ, I would plainly ask whether the Art of the Pulſe is not the ſame, whether we call the Cauſes by the *Chineſe*, *Grecian*, or Modern Names? The different Names or Hypotheſis are fram'd and built after divers Experiments have been try'd, and Matters of Fact clearly obſerv'd; and the Hypotheſis is always adapted to the natural *Phænomena*, and we may Practice by the *Chineſe*, as well as the old *Grecian* Notions; the Antiquity of the *Chineſe* Art muſt excuſe the crudity of their Notions, but they are deliver'd in the ſhort Aphoriſtical way that *Hippocrates* writ his Art; and this makes it more obſcure, as well as the Ignorance of the Perſons who give a confus'd immethodical Account of the *Chineſe* Art.

The

The *Chineſe* deſcribe the different Pulſes of the Sex, Habit, Seaſons, Conſtitutions, Climates, Ages.

The *Chineſe* deſcribe the Alterations of Pulſes by internal and external Cauſes, Heat, Cold, Wind, Humidity, Moiſture, which produce the Pulſes *ad extra*, or *ad intra*.

The *Chineſe* obſerve the Heat in the firſt place of the Pulſe, which the *Greeks* call the hot choleric Cacochymia; and the cold or watery is in the third place of the Pulſes, which the *Greeks* call the phlegmatic Cacochymias; and in the middle place ſtands the ſanguine moderate Temper of Blood, which has a moderate degree of Heat and Moiſture; by the places of Heat they diſcern that the Blood circulates too faſt; and in the place of Cold the Pulſe diſcovers that it circulates too ſlow.

By theſe different places of the Pulſe, they diſcern to which Region the Circulation tends; and by the different preſſure they diſcern the force of the Heart to carry the Blood more inwardly, or in the great Veſſels, or more externally through the capillary Arteries of any part, by which may be known in what part the Cacochymia fixes.

The

The Cacochymias they describe by their natural Pulses, the mixture of them by the mix'd Pulses; they observe the different Colours in the Face, in the Cacochymias, and the different Tastes of the Humours, and different Odors, and all the external Inditia obvious to our Senses, to confirm their Judgment by the Pulses.

They describe the Indication in several Diseases by the Pulse, and are extreamly nice in their Prognostications by them; it has been the Misfortune of many old Books to be too nicely explain'd, and abus'd by the Alteration and Additions of Commentators; 'tis probable that the Moderns have added all the extraordinary Prognostications, and which seem'd Incredible; but if upon our trying of these by a long Observation we find them true, this will confirm us in a better Opinion of the *Chinese* Art; it is not fit for any Person to reject Matters of Fact, till by Experience he finds them to be false. If I could fully describe this Art by unriddling all the obscure Symbols of it, we should very much admire the long Experience of the *Chinese*, as well as their ingenuous Project of measuring the Number of Pulses by the Number of Respirations.

tions. I hope all I have said will occasion the Reader to suspend his rash Censure, that the *Chinese* have not the sphugmick Art they pretend to; 'tis possible that 'tis now exercis'd by ignorant Practisers, and 'tis now reported to us very unskilfully by those *Europeans*, who never understood the *Galenick* Art about the Pulses. I find that the Learn'd *Isaac Vossius* has been hardly us'd for the favourable Report he has given of the *Chinese* Art; but this may be said for him, that he has not asserted more about that Art, than may be found in *Cleyer*'s Specimen, which was Publish'd before *Vossius* writ; and since that Learn'd Person took his good Opinion of that Art from *Cleyer*'s Book, I cannot be thought singular in my Explication and Approbation of that Art; but in this Particular I must differ from *Vossius*, that *Avicenna* had some Knowledge of the *Chinese* Art by the *Chinese* Inhabiting *Cathaya Nigra*; since what *Avicenna* has writ is a perfect Transcript from *Galen*'s Books, and has nothing like the *Chinese* Art; neither have the *Arabians* improv'd either the Notions or Experience deliver'd by *Galen*; the *Chinese* Art may farther be discern'd by their nice Computations.

The

The *Chineſe* reckon in 24 Hours at leaſt 54000 Pulſes, and in a quarter of an Hour 562. If this Calculation be juſt, the *Chineſe* will have at leaſt in a Minute 37 Pulſes.

The *Chineſe* reckon at moſt in 24 Hours 67500 Pulſes, and in a quarter of an Hour 703 Pulſes, and then there will be in a Minute 46 Pulſes; according to this Computation, the Latitude the Pulſes run muſt be nine Beats, and the moſt healthful Pulſe muſt be 42 in a Minute.

The *Chineſe* ſay, That in 24 Hours, there are Reſpirations 13500.

In a quarter of an Hour there are 150 Reſpirations, and four or five Pulſes are reckon'd to every Reſpiration. To nine Reſpirations the *Chineſe* allow from 45 to 50 Pulſes in good Health.

I will add theſe Remarks upon the Chineſe *Computations.*

At *Peking* there is Ice, and great Cold, as *Kao*, a Native, relates in his Deſcription of *China:* In other Parts the Air is Temperate, and in the Southern exceeding Hot; if ſo, none of the Computations of the Pulſes can be true; if the

Pulſes of the Climates anſwer to the Pulſes of the Seaſons, in cold Seaſons and Climates very rare Pulſes, in the hot very frequent are obſerv'd. In the cold Northern Parts of their Latitude, the number of Pulſes ought to be according to the different degrees of Heat and Cold obſerv'd in my Table of Climates; but ſince by the Account the *Chineſe* give of their Pulſes, their Numbers are leſs than ours; 'tis plain, the Pulſes becomes more rare in hot Climates; what Alterations muſt be allow'd in Pulſes by the profuſe Sweats in hot Climates, nothing but a farther Experience can determine; whether that does make the Pulſe more rare, as all Evacuations do; or whether the ambient hot Air makes the Pulſes more frequent, tho' weaker; if a Journal were kept of ſome healthful Pulſes every Morning by the Minute-Glaſs, thro' a Voyage from *England* to the Æquator, this Difficulty would be eaſily decided.

A Ta-

A Table of the Healthful Pulses in each Climate, supposing that excessive Heat make the Number of Pulses become more rare, by evacuating the native Heat.

Pulses in a Minute.	Æquator.
20	Under the Line.
25	5 Degrees from it.
30	10
35	15
40	20
45	25
50	30
55	35
60	40
65	45
70	50
75	55
80	60
85	65
90	70
95	75
100	80
110	85
120	90

The Latitude of *China* is from 18 degrees of Latitude to 40, and then the La-

titude of their healthful Pulſes will be from 37 to 60, but they reckon from 37 to 46 in a Minute; how far theſe Obſervations will be uſeful to Geography, a farther Experience will ſhew. *Peking* is near 40, and there the healthful Pulſe will run 60, according to my Computation.

Whether this Table made by ſuppoſing the Pulſe ſinks, as we Travel toward the Æquator be true, or that which is made upon Suppoſition that in the Southern Countries the Heat does raiſe the Pulſe to a greater frequency, I cannot certainly determine; but by the *Chineſe* Calculation of their number of Pulſes in one Day, this Table ſeems probable. And it is of great Moment in Phyſick to calculate the Tables of Climates aright, becauſe theſe Rules of Practice depend on it.

If hot Countries will ſink the Pulſes to more rarity, we ought to ſend our Patients, who are of hot Conſtitutions and hot Diſeaſes (ſuch are the Conſumptive) into the hotter Climates; and if our Pulſes run too low and rare, as in ſerous cold Conſtitutions, we ought to ſend ſuch Patients into colder Countries.

In hot Countries, they uſe a hot Diet and hot Regimen to ſupport the Pulſe,

and

and loſs of Spirits; in cold Countries, the Pulſe exceeds by ſtopping in the Perſpirabile, and a cool Regimen preſerves the cloſure of the Pores, and tempers the inward fiery Heat.

Becauſe the Indications of the *Chineſe* Pulſes ſeem ſomewhat obſcure, I will give the following ſhort Explication.

The Pulſes *ad Extra* ſhew, That the Circulation runs too faſt, and then produce different Effects or Symptoms in diſferent Parts or Regions of the Body.

1. In the Head or Lungs, or Breaſt; theſe effects Heat, Pains, hot Winds, Inflammation in the Eyes, Throat, Deafneſs, Defluxions, Thirſt, Delirium, Convulſions, Dyſpnæas, Coughs, Hæmorrhagies, Pains in the Breaſt, Garrulity, fætid Breath.

2. In the Region of the Stomach, Liver or Spleen, theſe Symptoms are obſerv'd in a quick Circulation, Nauſeouſneſs, Vomiting, Pain at the Stomach, *Nidorous Ructus*, or hot Winds, Cholera, hot Tumors, Obſtructions.

3. In the Region of the Reins, Loins, Legs, *Uterus*, Skin, theſe Affections, defect of Urine, or Suppreſſion, Dyſury, hot Cholics,

lics, ſtop of the Menſes, Rheumatic Pain and Laſſitude, or hot Tumors of the lower Parts, Dryneſs and Heat in the Skin.

The Pulſes *ad Intra* ſhew, That the Circulation runs too ſlow.

In the Region of the Head and Lungs they produce theſe Diſeaſes, Dizineſs in the Eyes, Noiſe in the Ears, debility of Spirits, Fear, Sadneſs, Obſtruction in the Nerves.

In the Region of the Stomach, Liver or Spleen, cold Wind, Pain, Indigeſtion of Meats, Pain and Sickneſs at Stomach, Vacuity.

In the Region of the Reins, Loins, Belly, and all the lower Parts, Cold in the Extremities, Stupors, Obſtructions, debility of Motion, Heavineſs, watery Tumors, pale Urine, cold Winds, heavineſs in the Reins, flux of the Belly, want of Perſpiration, cold Sweats, *Fluor Albus*.

When the Blood circulates freely, or in an exceeding manner, the hot ſanguineous Parts which are near the Heart, or great Veſſels ſuffer firſt; ſuch are the Muſcles of the Heart, the Lungs, and Breaſt, the Liver, Spleen, and common Muſcles; the cold Parts are more remote from

from the Heart, or receive leſs Blood, but more of the Limpha; and theſe ſuffer firſt in a weak and ſlow Circulation; theſe cold Parts are the Bones, Cartilages, Nerves, Membranes, Brain, Fat, Skin and Hair, all Glands of uſe to the Serum.

If the Pulſes in *England* be in a Minute.	70
In a quarter of an Hour there will be	1050
In an Hour,	4200
In 24 Hours,	100800
For 70 Pulſes in a Minute there are Reſpirations.	14
In 24 Hours, *Reſpirations*,	20160
In an Hour, *Reſpirations*,	840

I hope theſe ſurprizing Numbers will produce the ſame Reflexions in the Reader, as I ſhall now make, That nothing but an infinite wiſe God could contrive ſuch perpetual and numerous Motions, as the Pulſe and Reſpiration have in one Day; and it requires the Providence of the ſame wiſe Creator to preſerve 'em all the Days and Years of our Lives: Our Lives are mea-

measur'd by the Number of our Pulses, the first Pulse begins Life, and it ceases with the last; if the Number of one Day be wonderful, the many Millions which will happen in One Hundred Years, ought to be reckon'd among the greatest Miracles of the Creation.

FINIS.

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943 —— **Floyer** (Sir J.). **An Exposition of the Revelations** by Shewing the Agreement of the Prophetick Symbols with the History of the Roman, Saracen, and Ottoman Empires, and of the Popedom.

8vo, full calf. *Lond., Printed for M. Johnson in Litchfield, and sold by Mrs. Tracy on London Bridge,* 1719. £1 10s

This vol. was printed for Michael Johnson, the father of Samuel Johnson. The author was a Lichfield man and was often referred to by Samuel Johnson. See Boswell's Johnson, 1847, p. 23, 751, 783.



